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USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS

CHEMISTRY

No. 49

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ZOLOTAREV, P. P. and ULIN, V. I., Institute of Physical Chemistry of the Academy of Sciences USSR, Moscow

APPROXIMATE SOLUTION OF THE PROBLEM OF INTERNAL DIFFUSION IN A BIPOROUS ADSORBENT FOR STRONGLY CONVEX ADSORPTION ISOTHERMS

Moscow IZVESTIYA AKADEMII NAUK SSSR, SERIYA KHIMICHESKAYA IN Russian No 5, May 76 signed to press 6 Feb 76 p 1190

[Abstract] The authors examine internal diffusion in adsorbents with biporous structure for the case of adsorption isotherms that reach saturation rapidly enough to be approximated by a right angle. These are typical of adsorption of gas and vapor by zeolite and activated charcoal. Such a rectangular isotherm ($\alpha = 0, c = 0; \alpha = \alpha_0, c > 0$) leads to a finite zone of adsorption perturbation in the granule at finite time t . The boundary of this zone $Z(t)$ moves as a function of time. The law is found for the change in width of the adsorption wave front $\alpha(x)$ with time. The law of motion of the wave front is related to the moments of the kinetic curve of the adsorbent granule by the expression

1/2

USSR

ZOLOTAREV, P. P. and ULIN, V. I., IZVESTIYA AKADEMII NAUK SSSR, SERIYA KHIMICHESKAYA No 5, May 76 p 1190

$$M_1 = M_{\phi 1} + \frac{1}{b} \int_0^b t_*(x) dx$$

where $M_{\phi 1}$ is the first moment of the kinetic function of the microporous formations (for diffusion kinetics $M_{\phi 1} = r_0^2/15D_\alpha$, r_0 is the size of the microporous formations; D_α is the coefficient of diffusion in these formations; b is the size of a granule; $t_*(x)$ is the inverse function of $Z(t)$). This formula can be used to find the coefficients of internal diffusion D_i and D_α . Reference 1 Russian.

USSR

UDC 614.72-074:546.264-31:543.422.4

DMITRIYEV, M. T., doctor of chemical sciences, and KIRPRIN, V. I., candidate of technical sciences, Institute of General and Communal Hygiene imeni A. N. Sysin, Academy of Medical Sciences, Moscow

INFRARED-PHOTOMETRIC AUTOMATIC DETERMINATION OF CARBON DIOXIDE IN THE AIR

Moscow GIGIYENA I SANITARIYA in Russian No 7, Jul 76 signed to press
17 Dec 75 pp 84-88

[Abstract] A diagram and operating principle are presented for an automatic station for sanitary-hygienic determination of carbon dioxide gas in the air based on an IR analyzer. The device is designed to sample the air in a number of rooms or areas automatically in sequence. Recordings of the concentration of carbon dioxide in various rooms in an apartment over a 24-hour period are presented as an example of the operation of this device. Peaks clearly show the arrival of the occupant of the apartment, periods of activity, sleep, and departure of the occupant. Figures 2; Table 1; References 6 (Russian).

1/1

USSR

UDC 615.47:614.71-074

URBANSKIY, V. M., Shuma Sanitary-Epidemiological Station

AN INSTALLATION FOR TAKING AIR SAMPLES UNDER FIELD CONDITIONS

Moscow GIGIYENA I SANITARIYA in Russian No 7, Jul 76 signed to press
23 Jun 75 pp 95-96

[Abstract] A simple method has been developed for sampling air under field conditions. An air sample is drawn through the absorber of filter cartridge using the vacuum generated by the intake system of a car, truck or motorcycle, utilizing a system of hoses and connectors as illustrated in a figure which accompanies the article. Figure 1.

1/1

USSR

UDC 577.156.3.02:541.63

LIPKIND, G. M., MAKUMOV, I. S., and POPOV, YE. M., Institute of Bioorganic Chemistry imeni M. M. Shemyakin, Academy of Sciences USSR, Moscow

THEORETICAL CONFORMATIONAL ANALYSIS OF NONVALENT COMPLEXES OF
 α -CHYMOTRYPSIN WITH N-ACETYL-L-TRYPTOPHAN METHYLAMIDE AND N-ACETYL-L-
ALANYL-L-ALANYL-L-TRYPHANYL-L-ALANINE

Moscow BIOORGANICHESKAYA KHIMIYA in Russian Vol 2, No 7, Jul 76
signed to press 30 Dec 75 pp 966-977

[Abstract] Theoretical analysis is used to study the conformational aspects of the interaction of α -chymotrypsin with N-acetyl-L-tryptophan methylamide and N-acetyl-L-alanyl-L-alanyl-L-triophanyl-L-alanine. It is shown that the productive bonding of the substrate is achieved only in the lowest energy conformation of the complex. A study is made of the dependence of the position of the side chain of the Ser¹⁹⁵ group on orientation of the cleaved group. It is noted that the formation of a Michaelis complex with α -chymotrypsin occurs in a way such that only the substrate preferential as to conformational energy in the active center is productive, with one of the low energy forms of the free substrate. Figures 5; Tables 4; References 33: 7 Russian, 26 Western.
1/1

USSR

UDC 628.33 + 628.543

KOGANOVSKIY, O. M., doctor of chemical sciences, LEVCHENKO, T. M., candidate of chemical sciences, and GORA, L. M.

POSSIBILITIES FOR UTILIZING PURIFIED SEWAGE WATERS IN CLOSED WATER SUPPLY SYSTEMS IN BUSINESS PLANTS

Kiev VISNYK AKADEMII NAUK UKRAYINS'KOYI RSR (Herald of the Academy of Sciences, Ukrainian SSR) in Ukrainian No 8, Aug 76 pp 86-90

[Abstract] Introduction of closed water supply circuits is advocated for industrial purposes. The technological schematics for such a system consists of: 1) adsorption of residual organic compounds over activated charcoal, 2) regeneration of the spent charcoal, supplement with fresh material and recycling, 3) lowering concentration of salt by means of ion exchange systems, and 4) regeneration of the resins and recycling. The system is beginning to be economically feasible and should be introduced into practice during the next Five Year Plan. One table, no figures or references.

1/1

USSR

UDC 613.632.4:661.731]-074

SHAPOSHNIKOV, YU. K., and KONDAKOVA, L. V., candidates of chemical sciences, and KIRILLOVA, N. N., and LEBEDEV, M. A., Scientific Research Institute for Sanitary and Industrial Purification of Gases (Dzerzhinsk Branch)

STUDY OF THE COMPOSITION OF GAS EXHAUST FROM THE PRODUCTION OF NUTRIENT ACETIC ACID

Moscow GIGIYENA I SANITARIYA in Russian No 7, Jul 76 signed to press 29 Apr 75 pp 110-111

[Abstract] The processes involved in purification of acetic acid in the production of the edible product liberate volatile substances of unknown qualitative and quantitative composition into the air of the working areas. Samples were taken to determine the content of the air in the working areas by chromatographic methods. The results of the analysis indicate that the air requires purification due to the high concentrations of certain substances. Substances found included acetic acid, propionic acid, sulfur dioxide and aldehydes and ketones. Figures 2; Table 1.

1/1

USSR

UDC 613.6:621.315.221.8:678.8

ZHILOVA, N. A., MEZENTSEVA, N. V., KUBRAKOV, M. A., KONSTANTINOV, A. V.,
KUUZ, R. A., and TURUSINA, T. A., First Moscow Medical Institute imeni
I. M. Sechenov

PROBLEMS OF LABOR HYGIENE IN THE PRODUCTION OF ENAMELED WIRE WITH POLYESTER
INSULATION

Moscow GIGIYENA I SANITARIYA in Russian No 7, Jul 76 signed to press
30 Jun 75 pp 106-107

[Abstract] Medical examination of 120 persons working at vertical wire
enameling machines utilizing polyester insulation revealed a large number
of complaints of pains in the upper and lower extremities, changes in
menstrual cycles, itching, dryness, periodic reddening of the skin, edema
and painful areas in the skin, dryness of the nasopharynx, pain in the
right mediastinum and epigastral area. Objective examination confirmed
these complaints. Results of the studies indicate the need to improve
health conditions, primarily by replacing obsolete equipment, increasing
the effectiveness of catalytic combustion of the products of destruction
of varnishes, development of closed type varnish baths with centralized
varnish feed. Construction and sanitary-medical measures are also
recommended.

1/1

USSR

UDC 614.71/.73-074

DUSHUTIN, K. K., and SOPACH, E. D.

ROLE OF THE REACTION OF DIMETHYLAMINE WITH NITROGEN TETROXIDE AND OZONE
IN AIR POLLUTION

Moscow GIGIYENA I SANITARIYA in Russian No 7, Jul 76 signed to press
24 Jun 75 pp 14-18

[Abstract] A study is made of the interaction of DMA with nitrogen tetroxide
and ozone in binary mixtures at concentrations of 10^{-7} mol/l (10 mg/m³) in
the air and the degree of influence of these reactions on the sanitary
condition of the atmosphere is determined. All studies were performed under
laboratory conditions at normal air pressure and 20±1 C in a cylindrical
chamber 0.5 m in diameter with a total volume of 120 l. It is found that
under these conditions with an initial concentration of 10 mg/m³, DMA in a
gas phase reaction with nitrogen tetroxide forms N-nitrosodimethylamine,
aerosols of N-dimehtylnitramine and DMA nitrate. Under the conditions,
ozone breaks down DMA to formaldehyde. The reaction of DMA with nitrogen
tetroxide and ozone at 10 mg/m occurs with a half conversion time of less
than 10 minutes at 20±1 C. This is significantly faster than the photo-
chemical oxidation of hydrocarbons in the air. The reaction of DMA with
nitrogen tetroxide has negative hygienic results, since it produces the
active carcinogen NDMA and finely dispersed aerosols reducing the visibility.
Figures 2; Tables 3; References 20: 16 Russian, 4 Western.

1/1

USSR

UDC 614.777:665.6]:008

MURZAKHEYEV, F. G., and MINGAZETDINOV, A. A., Ufa Scientific Research Institute for Hygiene and Occupational Diseases, Republic Sanepid Station, Bashkir ASSR, Ufa

SCIENTIFIC AND TECHNICAL PROGRESS AND IMPROVEMENT OF THE SANITARY CONDITION OF BODIES OF WATER NEAR OIL REFINERIES AND PETROCHEMICAL ENTERPRISES

Moscow GIGIYENA I SANITARIYA in Russian No 7, Jul 76 signed to press
4 Aug 75 pp 7-10

[Abstract] Combined investigations concerning the hygienic effectiveness of measures for the protection of bodies of water undertaken at enterprises in the oil and petrochemical industry demonstrate that the degree of water pollution by oil refinery and petrochemical plant waste waters has been greatly reduced. Figures are quoted indicating the factors by which the number of improved low-leakage pumps and other improved varieties of equipment has increased in the oil industry in Bashkiria over the past few years. This has resulted in a decrease in losses of 31%, with a total increase in production volume of 11.8%. Waste water treatment plants have also been installed, reducing the level of pollution of Bashneftekhimzavod (Bashkir Petrochemical Plant) by 69.9%, including elimination of approximately 99% of the phenols. More work remains to be done in this area, however. Tables 2.

1/1

USSR

UDC 661.185.223.58:615.9

SOMOV, B. A., and LOPUKHOVA, K. A.

THE ROLE OF SYNTHETIC CLEANSERS IN PREVENTING INDUSTRIAL DERMATITIS

Moscow KHIMICHESKAYA PROMYSHLENNOST' in Russian No 8, Aug 76 pp 631-632

[Russian abstract provided by the source]

[Text] An examination is made of the part played by synthetic cleansers class DNS-AK (disodium sulfosuccinate and alkylolamides of aliphatic acids) in preventing industrial dermatitis. It is found that the detergent does not cause changes in the epidermal barrier, skin irritation or para-allergic reactions. The intensity of the action of synthetic detergents on the skin depends on the alkalinity of soap. The most effective synthetic detergents, including those containing complexing compounds, are recommended for extensive use in metalworking, machine building, asbestos cement, construction and other branches of industry.

1/1

USSR

UDC 661.185.4:615.9
661.187.842.2

NEMENKO, A. A., and YUSHCHENKO, V. A.

DERMATOLOGICAL CHARACTERISTICS OF NONIONIC SURFACTANTS

Moscow KHIMICHESKAYA PROMYSHLENNOST' in Russian No 8, Aug 76 p 630

[Russian abstract provided by the source]

[Text] An examination is made of the results of an experimental study of the effect of nonionic surfactants on the skin. It is found that an increase in threshold concentrations of hydroxyethylated alcohols and alkylphenols is directly related to an increase in the number of moles of ethylene. It is shown that hydroxyethylated alkylphenols with a number of moles of ethylene oxide of less than 10 induce sensitization. Hydroxyethylated alcohols show no sensitizing action. The data given in the paper are of importance in forecasting the future development of nonionic surfactant production. Table 1.

1/1

USSR

UDC 661.185.1:615.9
661.187.842.2

OGANESOV, S. G., REZNIKOV, I. G., and VAVILOV, A. M.

SKIN ACTION OF SYNTHETIC DNS-AU CLEANSING AGENT

Moscow KHIMICHESKAYA PROMYSHLENNOST' in Russian No 8, Aug 76 pp 628-629

[Russian abstract provided by the source]

[Text] The authors examine data of an experimental clinical study of the way the skin is affected by a synthetic cosmetic detergent based on disodium salt of monoesters of sulfosuccinic acid and alkylolamides of undecylenic acid [DNS-AU]. It is found that the threshold concentration of skin-irritating action is 29.7% of the active agent in aqueous solution, and the subthreshold concentration is 21.3%. In the subthreshold concentration, the preparation induces only nonspecific changes in the reactive state of experimental animals. The results of a clinical study of 15 patients with dry seborrhea of the scalp showed that DNS-AU detergent has a symptomatic effect. References 7: 3 Russian, 4 Western.

1/1

USSR

UDC 661.185.1:615.9
661.187.842.2

IYEVLEVA, YE. A., KALAMKARYAN, A. A., PETRUSHINA, V. I., BRAYTSEV, A. V.,
MARZEYEVA, G. I., and TIMOSHIN, G. G.

DERMATOLOGICAL EVALUATION OF THE QUALITY OF SYNTHETIC SKIN-CLEANSERS

Moscow KHIMICHESKAYA PROMYSHLENNOST' in Russian No 8, Aug 76 pp 627-628

[Abstract] The paper gives the results of a dermatological study of synthetic skin cleansers based on surfactants most frequently used for these toilet goods. The analysis covered ten shampoos based on alkyl sulfates, ten based on disodium sulfosuccinates (DDS) and ten based on alkyl sulfates combined with DSS. The threshold concentrations of surfactants leading to irritation with skin application were determined. Clinical tests were done on 216 subjects in good health and 412 patients suffering from dermatitis. The results show that detergents based on DSS can be used both by healthy people and by those suffering from psoriasis, eczema, neurodermititis and seborrhea.

1/1

USSR

UDC 661.185.223.3.092.94.085
661.7:547.113'023:66.092.94.085

VESELOVSKAYA, N. V., BERENFEL'D, V. M., CHUMAYEVSKIY, YE. V., ARTEM'YEV,
E. T., AKIMOV, A. V., and DZHAGATSPANYAN, R. V.

INVESTIGATION OF THE PART PLAYED BY SECONDARY REACTIONS IN DEEP RADIATION-
CHEMICAL OXIDATIVE DESTRUCTION OF AQUEOUS SURFACTANT SOLUTIONS

Moscow KHIMICHESKAYA PROMYSHLENNOST' in Russian No 8, Aug 76 pp 622-626

[Russian abstract provided by the source]

[Text] An investigation is made of oxidative gamma radiolysis of aqueous solutions of para-toluenesulfonate (TS). The authors study the way that the radiation yield $G(-TS)$ depends on the para-toluenesulfonate concentration [TS], dose and dose rate (I), and the concentration of additives: N,N-dimethyl-para-nitrosoaniline (RNO), para-sulfophenyl methyl ketone (SPMK), para-hydroxyacetophenone and 4-methylphenol. Self-retardation is observed at low I -- the rate of consumption of TS drops to zero. It is shown that when $[TS] > 10^{-4}$ mole/Z radiolysis is a chain reaction. It is established by kinetic analysis of the resultant data that the order of the reaction n with respect to TS increases from 0.5 to 1 with increasing I, and that it also depends on the composition of the solution (in the presence of SPMK n changes from 1 to 0.5). It is hypothesized that the peculiarities

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USSR

VESELOVSKAYA, N. V., BERENFEL'D, V. M., CHUMAYEVSKIY, YE. V., ARTEM'YEV, E. T., AKIMOV, A. V., and DZHAGATSPANYAN, R. V., KHIMICHESKAYA PROMYSHLENNOST' No 8, Aug 76 pp 622-626

of gamma radiolysis of TS involve accumulation of an intermediate product that leads to a transformation switching the chain of the more active radical to the less active radical. Figures 6; Table 1; References 15: 9 Russian, 6 Western.

2/2

USSR

UDC 628.543.566.085
628.543.15:661.185.1
628.543.49.085

MAKAROCHKINA, L. M., MIKHAYLOV, A. K., LYU, E., FILIPPOV, M. T., UPADYSHEV, L. V., BUSHLAYEVA, S. P., PANIN, YU. A., and DZHAGATSPANYAN, R. V.

COMPARISON OF RADIATIVE AND BIOCHEMICAL DESTRUCTION OF SURFACTANTS

Moscow KHIMICHESKAYA PROMYSHLENNOST' in Russian No 8, Aug 76 pp 620-621

[Abstract] Experiments were done on radiation purification of tannery wastes containing various surfactants, dyes, compensators, wetting agents and several other organic and inorganic pollutants. Cobalt-60 was used as the gamma source, and the treatment was combined with aeration. It was found that the products of radiolysis of biologically unoxidizable surfactants are oxidizable, as confirmed by the reduction in C.O.D. and B.O.D. The ratio of biochemical to chemical oxygen demand is a criterion of radiation purification. It is found that the end products of biochemical and radiation oxidation of surfactants are similar, but biochemical oxidation is sensitive to the structure of alkylarylsulfonates, while radiation treatment oxidizes all surfactants regardless of structure. Table 1; References 8: 6 Russian, 2 Western.

1/1

USSR

UDC 628.543.39.069.85.085
628.543.49.085.069.85
628,543.15:661.185.1

FILLIPOV, M. T., PANIN, YU. A., PETROV, S. A., DANILIN, D. I., BUSLAYEVA, S. P., ULADYSHEV, L. B., MAKAROCHKINA, L. M., REZNICHENKO, I. Z., and DZHAGATSPANYAN, R. V.

FOAM-RADIATION REMOVAL OF SYNTHETIC SURFACTANTS FROM WASTE WATER

Moscow KHIMICHESKAYA PROMYSHLENNOST' in Russian No 8, Aug 76 pp 618-620

[Russian abstract provided by the source]

[Text] The paper describes a method of removing surfactants from waste water by combining foam fractionation with radiation treatment of the foam for surfactant degradation in one or two devices. A material balance equation is derived for the foam-radiation equipment, and results of foam treatment with accelerated electrons are given, partly confirming this equation. The proposed method can be used to treat wastes with a high surfactant concentration that cannot be treated by the method of foam fractionation. Figures 2; Table 1; References 2: 1 Russian, 1 Western.

1/1

USSR

UDC 628.543.56:661.185

SVETLOVA, R. S., KOVALEVA, N. G., KLEVITSKIY, B. A., PAVLOVA, M. R., and DAVYDOV, V. D.

BIOCHEMICAL REMOVAL OF SURFACTANTS FROM WASTE WATERS

Moscow KHIMICHESKAYA PROMYSHLENNOST' in Russian No 8, Aug 76 pp 616-617

[Abstract] An investigation was made of biochemical purification of waste water containing sulfonol chloride from the Sumgait Chemical Combine. This compound is present in most Soviet synthetic washing detergents. Treatment was done by agitation aeration tanks with the addition of biogenic elements in the form of nitrogen (15-20 mg/Z) and phosphorus salts (5 mg/Z) for 16 hours. The C.O.D. was reduced from 100 to 36.7 mg O₂/Z, and the B.O.D. was reduced to 63.2 to 12.5 mg/Z. Degree of surfactant removal was 77%. In tests on biochemical oxidation of wastes containing various surfactants combined with sewage, degradation of surfactants was 87% effective for an initial concentration of about 30 mg/Z, and the degree of purification was 99% with respect to B.O.D., and 95% with respect to C.O.D. The results show that this type of industrial waste should be combined with sewage before treatment to improve effectiveness. References 5 Russian.

1/1

USSR

UDC 666.233

BAKUL', V. M., ANDRYEYEV, V. D., and KUDINOV, V. M., doctors of technical sciences, LUKASH, V. A., and PYETUSHKOV, V. G., candidates of technical sciences

BLAST DIAMONDS AND SOME OF THEIR PROPERTIES

Kiev VISNYK AKADEMII NAUK UKRAYINS'KOYI RSR [Herald of the Academy of Sciences, Ukrainian SSR] in Ukrainian No 8, Aug 76 pp 40-43

[Abstract] Experimental results showed it to be possible to obtain diamonds with high physical-mechanical and utilization properties by converting graphite to diamond under blast energy. These diamonds may be used along with ACH diamonds in preparation of instruments, pastes, suspensions, corundums, special ceramics and other ultrahard materials. Figures 2; Table 1; References 9: 8 Russian, 1 Western.

1/1

USSR

UDC 678.743.22-462:678.048]019.234

SHEFTEL', V. O., TSAM, Z. S., GRINBERG, I. M., EKSTRINA, E. M., and ARKHIPOVA, L. A.

HYGIENIC PROPERTIES OF PVC PIPES STABILIZED WITH LEAD COMPOUNDS

Moscow PLASTICHESKIYE MASSY in Russian No 7, Jul 76 p 71

[Abstract] Pipes made from rigid PVC with lead sulfate, tribasic, and lead stearate, dibasic, used as stabilizers were tested for migration of lead into the water flowing through the pipes. It is found that pipes are suitable for use in water supply systems if the lead-containing stabilizer concentration is 2.5 wt.% and two wash cycles are used (6 hours of running water followed by 18 hours standing water in each cycle). The pipes should not release more than 0.05 mg of lead per liter of water. References 4: 3 Russian, 1 Western.

1/1

YERMOLAYEVA, G. I., and ALEYEVA, I. N.

TREATMENT OF WASTE WATERS OF STYRENE COPOLYMER SYNTHESIS

Moscow PLASTICHESKIYE MASSY in Russian No 7, Jul 76 signed to press
15 Jan 76 p 60

[Abstract] The article describes a method developed at the Orekhovo-Zuyevo "Karbolit" Production Association for pretreating waste water from styrene copolymer production before biological purification. The concentrated waste water is collected and heated to 90-95° with agitation, and then pumped into a settling tank. Sulfuric acid treatment coagulates the particles of copolymer and emulsifier, which are then separated from the clarified water. Solid particles larger than 1 mm are held back by a metal screen as the clarified water is pumped out of the settling tank. The treated water is then diluted about eight to one with municipal waste water before biological purification. The system has proved to be effective in five years of operation.

1/1

USSR

UDC 541.64:543.872

MALOVIK, V. V., IL'INSKIY, A. A., LEYKIN, YU. A., SMIRNOV, A. V., and SEMENIY, V. YA., Institute of Organic Chemistry, Academy of Sciences UkrSSR

SF-5 PHOSPHONIC ACID CATION-EXCHANGE RESIN PRODUCTION TECHNIQUE

Kiev KHIMICHESKAYA TEKHNOLOGIYA in Russian No 4(88), Jul/Aug 76 signed to press Jun 74 pp 21-23

[Abstract] The process of synthesizing SF-5 phosphonic acid cation exchanger involves the following stages: phosphorylation of a styrene-divinylbenzene copolymer with phosphorus trichloride in the presence of $AlCl_3$; hydrolysis of the resultant polystyrene phosphonic acid chloride; oxidation of the polystyrene phosphonic acid; conditioning of the resin. In the phosphorylation stage the phosphorus trichloride is poured over the porous copolymer, and the mixture is stirred for an hour, after which anhydrous aluminum trichloride is added and the reaction mixture is heated to 70-75°C and held at this temperature for 6 hours with continuous agitation. After removal of hydrogen chloride and the unreacted PCl_3 , 5% hydrochloric acid is added to the reactor and the mixture is cooled to -10°C. Copolymer is added and the temperature is held at 7-10°C. After loading is completed, the mixture is heated to the boiling point of the liquid and held for an hour.

1/2

USSR

MALOVIK, V. V., IL'INSKIY, A. A., LEYKIN, YU. A., SMIRNOV, A. V., and SEMENIY, V. YA., KHIMICHESKAYA TEKHNOLOGIYA No 4(88), Jul/Aug 76 pp 21-23

Hydrogen chloride is removed continuously. The mixture is then cooled to 30°C. The resultant granules are adjusted to pH 3. The polymer is oxidized in 28-30% nitric acid for 6 hours with agitation at 60-65°C. The nitrogen oxides are continuously removed during the reaction. After completion of the reaction, the mixture is cooled to 30°C and washed with condensate until the pH reaches 5-6. The ion exchanger is conditioned for standardizing by washing with aqueous solutions of acid and alkali in a sorption column. The duration of the complete production cycle is two days. References 6: 4 Russian, 2 Romanian.

2/2

USSR

UDC 547.463+542.953.7+547.486

ODINOKOV, V. N., GALEYEVA, R. I., and TOLSTIKOV, G. A., Institute of Chemistry, Bashkir Affiliate of the Academy of Sciences USSR

THE DIECKMANN REACTION FOR POLYCARBOXYLIC ACID ESTERS

Leningrad ZHURNAL ORGANICHESKOY KHIMII in Russian Vol 12, No 7, Jul 76
signed to press 4 Sep 75 pp 1442-1449

[Russian abstract provided by the source]

[Text] The dieckmann reaction for tetramethyl esters of diastereoisomeric 1,2,3,4-pentanetetracarboxylic acids is accompanied by isomerization with respect to asymmetric atoms, resulting in the formation of a mixture of diastereoisomeric trimethyl-4-oxo-5-methylcyclo-pentane, 1,2,3-tricarboxylates from different diastereoisomeric tetraesters, the principal component of the mixture being the trans, trans, trans-isomer. The cyclopentaneketo-triester was converted by the Michael reaction to the trimethyl-3 α -hydroxy-5-oxo-3-methylperhydroindan-1,2,7 α -tricarboxylate. Subsequent dehydration yields the trimethyl-5-oxo-3-methyl-5,6,7,7 α -tetrahydroindan-1,2,7 α -tricarboxylate. Acid hydrolysis of the resultant substituted oxocyclopentane and hydroxyperhydroindan is accompanied by decarboxylation near the keto and hydroxy groups respectively. Tables 2; References 11: 7 Russian, 1 Polish, 3 Western.

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Nitrogen Compounds

USSR

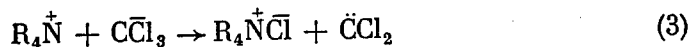
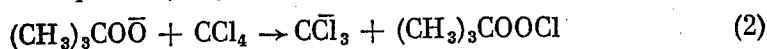
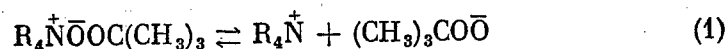
UDC 541.67:542.91:547.233.4:547.412.133

PERSHIN, A. D., LAPSHIN, N. M., BUCHACHANKO, A. L., Institute of Chemical Physics, Academy of Sciences USSR, Moscow, Gor'kiy State University imeni N. I. Lobachevskiy

CHEMICAL POLARIZATION OF NUCLEI. REPORT 3. INTERACTION OF QUATERNARY AMMONIUM SALTS OF HYDROPEROXIDES WITH CARBON TETRACHLORIDE

Moscow IZVESTIYA AKADEMII NAUK SSSR, SERIYA KHIMICHESKAYA in Russian No 5, May 76 signed to press 28 May 75 pp 1001-1005

[Abstract] Chemical polarization of ^{13}C nuclei is used to study the mechanism of interaction of quaternary ammonium salts of hydroperoxides with CCl_4 . The principal reaction products are chlorides of tetraalkylammonium and tert-butyl alcohol. The composition of the final products shows that the interaction is made up of a series of ionic reactions:

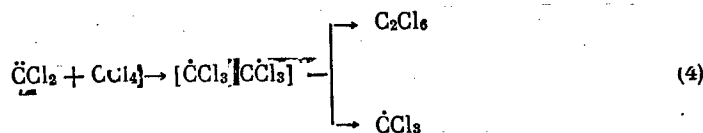


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USSR

PERSHIN, A. D., LAPSHIN, N. M., BUCHACHANKO, A. L., IZVESTIYA AKADEMII NAUK SSSR, SERIYA KHIMICHESKAYA No 5, May 76 pp 1001-1005

A comparison of the composition of the products of these reactions with the observed chemically-induced polarization of carbon nuclei shows that the molecules with polarized nuclei are produced chiefly by conversions of the two intermediate products $(\text{CH}_3)_3\text{COOCl}$ and $\overset{-}{\text{C}}\text{Cl}_2$. The reaction of dichlorocarbene with carbon tetrachloride is

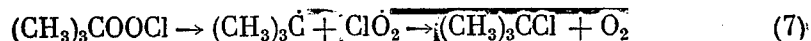
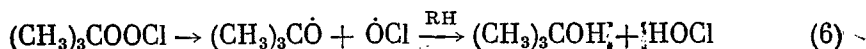
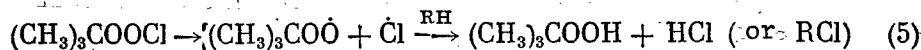


The unstable tert-butylperoxyhypochloride formed in reaction (2) may decompose in three ways:

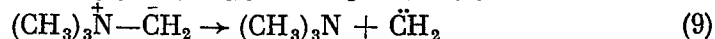
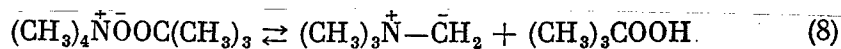
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USSR

PERSHIN, A. D., LAPSHIN, N. M., BUCHACHANKO, A. L., IZVESTIYA AKADEMII
NAUK SSSR, SERIYA KHIMICHESKAYA No 5, May 76 pp 1001-1005



The principal reaction is apparently (6) since it forms tert-butyl alcohol. Another mechanism of dissociation of tetraalkylammonium salts of hydroperoxide is



This is a secondary mechanism since the yield of hydroperoxide and tertiary amine is low. However it does lead to formation of carbene $\overset{\ominus}{\text{C}}\text{H}_2$, which then reacts with carbon tetrachloride. Figure 1; Tables 2; References 9:
7 Russian, 2 Western.

3/3

USSR

UDC 541.124.7:543.42.062:547.564.3

FILATOVA, T. N., and KHURGIN, YU. I., Institute of Organic Chemistry imeni
N. D. Zelinskiy, Academy of Sciences USSR, Moscow

SPECIFIC SOLVATION OF ION PAIRS IN DIMETHYL SULFOXIDE

Moscow IZVESTIYA AKADEMII NAUK SSSR, SERIYA KHIMICHESKAYA in Russian No 5,
May 76 signed to press 14 May 75 pp 1011-1017

[Abstract] An investigation was made of specific solvation by DMSO molecules of the ion pairs that form when para-nitrophenol interacts with butylamine and diethylamine. Spectrophotometric analysis shows that there are two forms of the p-nitrophenolate anion in the DMSO-amine system--with $\lambda_{\text{max}} \approx 402$ nm and 436-438 nm. The relative concentration of these forms depends on the composition of the medium. DMSO causes specific solvation of the p-nitrophenol-amine pair. The solvation numbers are $n = 3$ and 2 respectively in ion pairs of nitrophenol with n-butylamine and diethylamine. With a transition from protonic associated solvents such as water and amine to DMSO, there is a reduction in the half-width of the absorption band of the p-nitrophenolate anion and a corresponding increase in the coefficient of extinction. A scheme is proposed for specific solvation of an ion pair in DMSO. Figures 5; Tables 2; References 7: 1 Russian, 6 Western.

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USSR

UDC 541.67:547.852.2

FESHIN, V. P., GILLER, S. A. (deceased), AVOTA, L. YA., and VORONKOV, M. G., Irkutsk Institute of Organic Chemistry, Siberian Department of the Academy of Sciences USSR, Irkutsk, Institute of Organic Synthesis, Academy of Sciences Lithuanian SSR, Riga

NMR SPECTRA OF Cl^{35} CHLORINE-SUBSTITUTED DERIVATIVES OF PYRIDAZONE-6

Riga KHIMIYA GETEROTSIKLICHESKIKH SOYEDINENIY in Russian No 3, Mar 76 signed to press 21 May 75 pp 392-395

[Russian abstract provided by the source]

[Text] NMR spectra of Cl^{35} chloropyridazones-6 are used as a basis for studying the influence that substituents in the pyridazone ring (including the carbonyl oxygen atom) have on the chlorine atoms in positions 3, 4 or 5. The NMR frequencies of 1-phenyl-4,5-dichloropyridazone-6 are compared with the reactivity of the chlorine atoms in this compound in reactions of nucleophilic substitution. References 11: 8 Russian, 3 Western.

1/1

USSR

UDC 547.759.3'821:66.095.23

KUCHKOVA, K. I., STYNGACH, YE. P., RIVILIS, F. SH., FROLOVA, N. M., and SEMENOV, A. A., Institute of Chemistry, Academy of Sciences MoldSSR, Kishinev

THE CARBOLINES. VIII. α -CARBOLINE COMPOUNDS FROM OXIMES OF β -(INDOLYL-3)-KETONES

Riga KHIMIYA GETEROTSIKLICHESKIKH SOYEDINENIY in Russian No 3, Mar 76 signed to press 14 May 75 pp 386-391

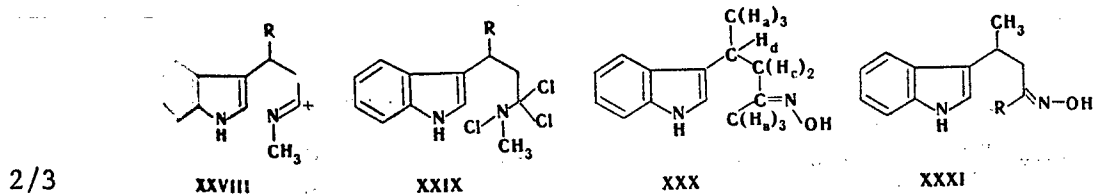
[Abstract] Using previously developed methods the authors synthesize new substituted β -carbolines XIV-XVI that are potential physiologically active compounds. Ethylidene and isobutylidene acetones were reacted with indole under the action of perchloric acid, forming indole ketones I and III which were converted to oximes II and IV (for synthesis of α -substituted oxime VI, tert-butyl α -propylacetoacetate was methylated with gramine methylsulfate). Oximes II, IV and VI were converted to 3,4-dihydro- β -carbolines by contact with phosphorus pentachloride for one minute in warm nitrobenzene. The resultant hydrochlorides X-XIII were dehydrogenated by heating in glycol with palladium black. When oxime II is reacted with PCl_5 , an additional compound identified as 1H-1,4-dimethyl-2-chloro- α -carboline (XVII) is

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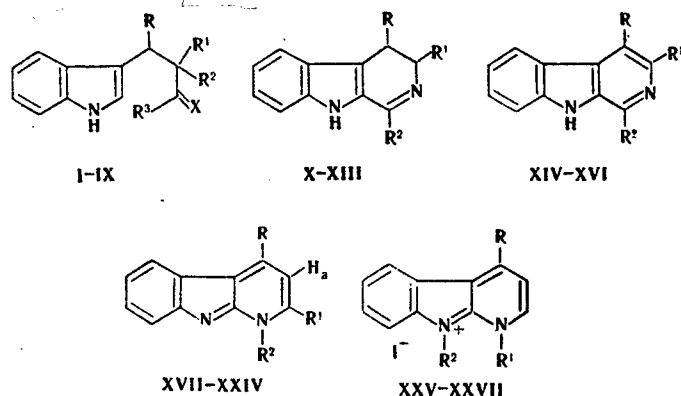
KUCHKOVA, K. I., STYNGACH, YE. P., RIVILIS, F. SH., FROLOVA, N. M., and SEMENOV, A. A., *KHIMIYA GETEROTSIKLIЧЕСKIKH SOYEDINENIY* No 3, Mar 76 pp 386-391

formed in addition to carboline X. The product of reduction dechlorination of XVII is compound XVIII. Regrouping in oximes VIII and IX under the action of PCl_5 in nitrobenzene forms anhydronium bases XIX and XXI, which can be readily converted to XX and XXII. Phosphorus pentachloride acts on VII to give α -isocarboline XXIV. The first stage of the process leading to formation of α -carboline bases is apparently Beckman regrouping of oximes with migration of radical R^3 . It can be assumed that cation XXVII formed by Beckman regrouping is chlorinated to the intermediate compound XIX, which is cyclized in a Hoffman-Löffler type reaction, splits off HCl and is oxidized by nitrobenzene. The paramagnetic resonance signal of compound II indicates a mixture of two isomers, identified as the syn (XXX) and anti (XXXI) geometrical isomers. Tables 2; References 10: 4 Russian, 6 Western.



USSR

KUCHKOVA, K. I., STYNGACH, YE. P., RIVILIS, F. SH., FROLOVA, N. M., and SEMENOV, A. A., *KHIMIYA GETEROTSIKLIЧЕСKIKH SOYEDINENIY* No 3, Mar 76 pp 386-391



3/3

USSR

UDC 547.269.1'119

CHADAYEVA, N. A., MAMAKOV, K. A., ISKHAKOVA, D. A., ANOSHINA, N. P.,
A. YE. Arbuzov Institute of Organic and Physical Chemistry

SYNTHESIS AND CERTAIN PROPERTIES OF γ -CHLOROPROPYLESTERS OF THIOACIDS OF
THREE-COORDINATION ARSENIC

Leningrad ZHURNAL OBSHCHEY KHIMII in Russian Vol 46, No 4, Apr 76 pp 817-820
manuscript received 4 Nov 74

[Abstract] Continuing their studies on the synthesis and investigation of the properties of thioacid esters of three-coordination arsenic, the authors interacted alkyl esters of three-coordination arsenic acids with γ -chloro-propylmercaptan to produce γ -chloropropyl esters of the corresponding arsenic thioacids, earlier unknown. It is established that the γ -chloropropyl esters of alkylphenylthioarsenous acid undergo disproportionation upon heating. Figures 2; Table 1; References 5 (Russian).

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USSR

UDC 577.153.02

YARV, YA. L., AAVIKSAAR, A. A., GODOVIKOV, N. N., and LOBANOV, D. I., Tartu State University, ESSR, Institute of Cybernetics, Academy of Sciences ESSR, Tallin, Institute of Hetero-Organic Compounds, Academy of Sciences USSR, Moscow

INDUCTION INFLUENCE OF LEAVING GROUP IN THE REACTION OF ORGANOPHOSPHORUS INHIBITORS WITH ACETYLCHOLINESTERASE

Moscow BIOORGANICHESKAYA KHIMIYA in Russian Vol 2, No 7, Jul 76 signed to press 12 Nov 75 pp 978-985

[Abstract] The biomolecular constants of the rate of inhibition of acetylcholinesterase (EC 3.1.1.7) by organophosphorus inhibitors $(C_2H_5O)_2-P(O)SX$ are determined, where $X = -C_nH_{2n+1}$ ($n=4-8$), $-(CH_2)_mSC_2H_5$ ($m=1-6$), and the biomolecular constants of their alkaline hydrolysis are defined. It is shown that the inhibiting capacity of compounds as a function of the structure of their leaving group is described by the equation $\log k_{II} = \log k_{II}^0 + \rho^* \sigma_X^* + \phi \pi_X$, considering the induction influence and hydrophobicity of the substituent X. The values of the constant are defined: $\rho^* = 4.0$, $\phi = 0.58$, $\log k_{II}^0 = -1.2$. The reaction constant ρ^* for the

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YARV, YA. L., AAVIKSAAR, A. A., GODOVIKOV, N. N., and LOBANOV, D. I., BIOORGANICHESKAYA KHIMIYA Vol 2, No 7, Jul 76 pp 978-985

reaction of phosphorylation of the active center of an enzyme is 1.8 times ρ^* for the reaction of alkaline hydrolysis. Possible difference in the structure of the transition states of these reactions are discussed. Figures 3; Tables 2; References 49.

USSR

UDC 547.26'118

PUDOVIK, A. N., ZIMIN, M. G., SOBANOV, A. A., and ZABIROV, N. G., Kazan' State University imeni V. I. Ul'yanov-Lenin

INTERACTION OF α -OXYALKYLPHOSPHONATES WITH ACETOACETIC ESTER AND DIKETENE

Leningrad ZHURNAL OBSHCHEY KHIMII in Russian Vol 46, No 4, Apr 76 signed to press 28 Oct 74 pp 770-773

[Abstract] Continuing their study of the esters of α -oxyalkylphosphonic acid and the synthesis of unsaturated organophosphorus compounds on their basis, the authors studied the interaction of diethyl esters of α -oxymethyl-, ethyl- and allylphosphonic acids with acetoacetic ester and the diethyl esters of α -oxyethyl-, allyl- and β -carboethoxyisopropylphosphonic acids with diketene. It is found that when the diethyl esters of α -oxymethyl-, ethyl-, allyl- and β -carboethoxyisopropylphosphonic acids are reacted with acetoacetic ester and diketene in the presence of alkaline catalysts, acetyl acetates of the esters of α -oxyalkylphosphonic acid are formed, which are capable of keto-enol tautomerism. Table 1; References 8 (Russian).

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USSR

UDC 547.26'118

PUDOVIK, M. A., MEDVEDEVA, M. D., and PUDOVIK, A. N., A. YE. Arbuzov Institute of Organic and Physical Chemistry

THE INTERACTION OF CHLOROPHOSPHITES AND DIALKYLPHOSPHITES WITH AMINO-SILANES AND AMINOSILAZANES

Leningrad ZHURNAL OBSHCHEY KHIMII in Russian Vol 46, No 4, Apr 76 signed to press 17 Dec 74 pp 773-776

[Abstract] In order to determine the possibility of producing compounds containing the system $P^{III}N-Si$, we studied the interaction of certain dialkylchlorophosphites with monoalkyl- and monoarylamino-silanes. It was found that these reactions, both with and without bases present, occur by breaking of the Si-N bond and lead to alkyl (aryl) amides of dialkylphosphorous acids. Thus, the interaction of diethylchlorophosphite with trimethylsilyl-tert-butylamine in the presence of triethylamine leads to the production of the tert-butylamide of diethylphosphorous acid. Dialkylphosphorous acid chlorides react with monoalkyl and monoarylamino-silanes to form alkyl (aryl) amides of dialkylphosphorous acids. Cyclic and normal chlorophosphites with heptamethyldisilazane form N-silylated derivatives of trivalent phosphorus and diphosphorylated methylamine. The interaction of acid phosphites with aminosilanes and silazanes results in the production of silylphosphites. References 5: 2 Russian, 3 Western.

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USSR

UDC 547.26'118

FESHCHENKO, N. G., and KOSTINA, V. G., Institute of Organic Chemistry,
Academy of Sciences Ukr SSR

ALKOXYDIIODOPHOSPHINES AND AROXYDIIODOPHOSPHINES. II.

Leningrad ZHURNAL OBSHCHEY KHMII in Russian Vol 46, No 4, Apr 76 signed to
press 2 Jul 74 pp 777-783

[Abstract] Alkoxydiiodophosphines were produced by the authors to inter-
acting alkoxydichlorophosphines with lithium iodide in an inert solvent.
They are significantly less stable than aroxydiiodophosphines produced by
a similar method, beginning to decompose at $-20 - -15$ C, but can be stored
for long periods unchanged at $-60 - -50$ C. When they disproportionate at
20 C, they are converted to trialkylphosphites and phosphorus triiodide.
These two products interact, producing alkyl iodides, phosphorus diiodide
and a polymer of unknown structure. Diaroxy and dialkoxyiodophosphines
are stable only in solution at low temperatures. They also dispropor-
tionate. Alkoxydiiodophosphines interact with iodine to liberate
alkyl iodides and form phosphorus oxyiodide. Table 1; References 6:
4 Russian, 2 Western.
1/1

USSR

UDC 547.558.1+547.461.3

BYYSTRO, V. K., KRICHEVSKIY, L. A., and MULDAKHMETOV, Z. M., Karaganda
Chemical-Metallurgical Institute, Academy of Sciences Kazakh SSR

OXIDES OF TERTIARY PHOSPHINES CONTAINING THE α -EPOXYCYCLE

Leningrad ZHURNAL OBSHCHEY KHMII in Russian Vol 46, NO 4, Apr 76 signed to
press 11 Jul 74 pp 783-785

[Abstract] Type (IV) oxyrans were synthesized by cyclizing the corresponding
bromohydrins with caustic potash in an aprotic polar solvent. The bromo-
hydrins were produced by attachment of hypobromous acid to the corresponding
olefin. Catalytic quantities of trifluoroacetic acid in an indifferent
solvent causes regrouping of tertiary phosphine oxides containing the
 α -epoxycycle to aldehydes, and their hydration leads to the corresponding
diols. References 7: 1 Russian, 6 Western.

1/1

USSR

UDC 547.241+547.422

VYSOTSKIY, V. I., CHUPRAKOVA, K. G., and TILICHENKO, M. N., Far Eastern State University, Vladivostok

REACTIONS OF 1,5-DIKETONES. XVIII. INTERACTION OF 1,5-DIKETONES WITH PHOSPHORUS TRICHLORIDE

Leningrad ZHURNAL OBSHCHEY KHIMII in Russian Vol 46, No 4, Apr 76 signed to press 30 Sep 74 pp 785-789

[Abstract] The reaction of 1,5-diketones with phosphorus trichloride is studied in acetic acid at 60-65 C. Under these conditions, 2-oxytetrahydropranyl-6-phosphonic acid lactones are formed with high yield. The acid chloride of 2-oxy-1,4-diphenylperhydrochromenyl-8a-phosphonic acid lactone is synthesized, hydrolyzed to lactone and converted from the lactone to its methyl ester. Table 1; References 13: 9 Russian, 4 Western.

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USSR

UDC 547.26'118

MURAV'YEV, I. V., and FEDOROVICH, I. S., L'vov State University imen I. Franko

ARYLATION OF DI- AND TRITHIOPHOSPHORIC ACID ESTER HALIDES

Leningrad ZHURNAL OBSHCHEY KHIMII in Russian Vol 46, No 4, Apr 76 signed to press 12 Nov 75 pp 789-791

[Abstract] The authors found that alkylidichlorodithiophosphonates and dialkylmonochlorotrithiophosphates are arylated by benzene and toluene in the presence of anhydrous ammonium chloride. The reaction occurs with boiling of the reaction mixture with an excess of benzene for 2.5-5 hr. The diphenylphosphonic and phenyltrithiophosphonic acid esters produced are liquids which are easily soluble in most organic solvents. When methylidithiodichlorophosphate, dimethyltrithiomonochlorophosphate and isopropylidithiodichlorophosphate are interacted with benzene in the presence of anhydrous ammonium chloride, the reaction occurs by splitting of the P-S-C bond. Table 1; References 5: 3 Russian, 2 Western.

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USSR

UDC 547.26'118

ZHARKOV, V. V., BAKHITOV, M. I., KUZNETSOV, YE. V., and RESHETOVA, L. A.,
Kazan' Institute of Chemical Technology

KINETICS OF CATALYTIC INTERACTION OF DIETHYLPHOSPHITE WITH ISOCYANATES
IN THE PRESENCE OF STANNOUS OCTOATE

Leningrad ZHURNAL OBSHCHEY KHIMII in Russian Vol 46, No 4, Apr 76 signed to
press 18 Nov 74 pp 791-795

[Abstract] A study is made of the peculiarities of the kinetics of the interaction of diethylphosphorous acid with phenyl-, o-, m- and p-chlorophenylisocyanates. Stannous octoate and 2-methylbicyclo[2,2,2]diazol-1,4-octane were used as catalysts. The relative influence of the substituents on the reactivity of the chlorophenylene isocyanates was established. The temperature dependence of the reaction rate of diethylphosphite with phenylisocyanate was determined and the effective activation energy of the reaction calculated. Figures 3; Tables 2; References 6 (Russian).

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USSR

UDC 547.241+547.73

KHAYRULLIN, V. K., and NESTERENKO, L. I., A. YE. Arbuzov Institute of Organic and Physical Chemistry, Kazan Branch of the Academy of Sciences USSR

CERTAIN REACTIONS OF α -CHLOROTHIENYLDICHLOROPHOSPHINE

Leningrad ZHURNAL OBSHCHEY KHIMII in Russian Vol 46, No 4, Apr 76 signed to
press 19 Nov 74 pp 795-800

[Abstract] This work is a continuation of earlier works studying organophosphorus derivatives of α -chlorothiophene with the three-coordination atom of phosphorus -- esters and chlorophosphines. The acid ethyl ester of α -chlorothiophenylphosphonous acid reacts exothermically with aldehydes and ketones to form α -chlorothiophenyl- α' -alkylphosphinic acid esters. A method is developed for production of pure α -chlorothiophenyl-2-chloroformyl-ethylphosphinic acid chloride by reaction of α -chlorothiophenyldichlorophosphine with acrylic acid with subsequent sequential treatment of the reaction products with acetic anhydride and phosphorus pentachloride. Figure 1; Table 1; References 4: 3 Russian, 1 Western.

1/1

USSR

UDC 547.26'118+547:314.2

AMOSOVA, S. V., TARASOVA, O. A., KHIL'KO, M. YA., and TROFIMOV, B. A.,
Irkutsk Institute of Organic Chemistry, Siberian Department of the Academy
of Sciences USSR

INTERACTION OF ESTERS OF CERTAIN THIOPHOSPHORIC ACIDS WITH ACETYLENE

Leningrad ZHURNAL OBSHCHEY KHIMII in Russian Vol 46, No 4, Apr 76 signed to
press 20 Nov 74 pp 803-808

[Abstract] A discussion is presented of the results of the use of the
reaction of certain thione compounds with acetylene, leading to divinyl
sulfide and its substituents to certain thiophosphoric compounds. The
P = S fragment of thiophosphoric acid esters in aqueous DMSO, in the
presence of alkali, reacts with acetylene to form divinyl sulfide. When
triethylthionophosphate, triethyltetrathiophosphate and triethyltrithio-
phosphate are interacted with acetylene in an alkaline medium, the P-O
and P-S bonds are split, forming the corresponding alkylvinyl esters and
sulfides. Tables 3; References 11: 8 Russian, 3 Western.

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USSR

UDC 547.241

ZDOROVA, S. N., NOVIKOVA, Z. S., and LUTSENKO, I. F., Moscow State University

PRODUCTION AND CERTAIN PROPERTIES OF α -METALLIZED ESTERS OF PHOSPHORUS (III)
SUBSTITUTED ACETIC ACIDS

Leningrad ZHURNAL OBSHCHEY KHIMII in Russian Vol 46, No 6, Jun 76 signed to
press 16 Apr 75 pp 1218-1222

[Abstract] The authors studied metallized esters of phosphorus (III)
substituted acetic acids, as well as certain properties of the enolates
produced. The metallizing reagent used was sodium bis(trimethylsilyl)-
amide, widely used for the production of sodium enolates in a number of
carbonyl compounds. The reaction was conducted in a solution of ether or
DME. It is shown that the esters of phosphorus (III) substituted acetic
acid are easily metallized by sodium bis(trimethylsilyl)amide at the
methylene group. The direction of the interaction of sodium enolates of
phosphorus-substituted alkylacetates is determined by the electrophilicity
of the reagent; the reaction may occur at the phosphorus, carbon or oxygen
atom of the mesomer system. Tables 2; References 11: 4 Russian, 7 Western.

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USSR

UDC 547.341.07

FRIDLAND, S. V., DMITRIYEVA, N. V., VIGALOK, I. V., and SALAKHUTDINOV, R. A., S. M. Kirov Chemical-Technological Institute, Kazan'

PHOSPHORYLATION OF OLEFINS WITH PHOSPHORUS TRIBROMIDE IN THE PRESENCE OF PERCHLORYLFLUORIDE

Leningrad ZHURNAL OBSHCHEY KHIMII in Russian Vol 46, No 6, Jun 76 signed to press 8 Jul 74 pp 1228-1231

[Abstract] It is shown that the interaction of phosphorus tribromide with olefins in the presence of perchlorylfluoride leads to the synthesis of 1-bromoalkane-2-phosphonic acid bromofluorides and dibromides. The phosphorylation of olefins with trivalent phosphorus halides occurs at the phosphorus-halogen bond. The product of the reaction of 3-ethoxy-1-chloropropane-2-phosphonic acid chlorofluoride and dichloride with sodium ethylate is the diethyl ester of 3-ethoxy-1-protein-2-phosphonic acid. Based on analysis of the structure of the diester produced, it is concluded that the phosphoryl group is attached to the second carbon of the olefin atom. Figure 1; References 7: 6 Russian, 1 Western.

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USSR

UDC 547.341

FRIDLAND, S. V., SHCHUKAREVA, T. M., and SALAKHUTDINOV, R. A., S. M. Kirov Institute of Chemical Technology, Kazan'

THE INTERACTION OF PHOSPHORUS TRIBROMIDE WITH OLEFINS UNDER THE INFLUENCE OF OXYGEN

Leningrad ZHURNAL OBSHCHEY KHIMII in Russian Vol 46, No 6, Jun 76 signed to press 23 Sep 74 pp 1232-1234

[Abstract] Earlier works have reported that when phosphorus tribromide interacts with olefins with bubbling of oxygen, dibromophosphonates are formed. The authors' previous data confirmed only the formation of a phosphorus-carbon bond, and the product was assigned the structure of a phosphonite. To confirm these initial data, more detailed studies were undertaken on the example of cyclohexene, 1-hexene and 1-octene. The reactions were performed by preliminary mixing of the olefin and phosphorus tribromide with subsequent bubbling through of oxygen. It is found that the interaction of olefins with phosphorus tribromide with oxygen initiation leads to the synthesis of 1-bromoalkane-2-phosphonous acid dibromides. References 8: 4 Russian, 4 Western.

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USSR

UDC 547.451+547.241

PETROV, K. A., CHAUZOV, V. A., BOGDANOV, N. N., and PASTUKHOVA, I. V.

NITROALKYL ORGANOPHOSPHORUS COMPOUNDS. 1. NITROMETHYLPHOSPHONATES

Leningrad ZHURNAL OBSHCHEY KHIMII in Russian Vol 46, No 6, Jun 76 signed
to press 15 Mar 74 pp 1242-1246

[Abstract] Methods are developed for synthesis of dialkylmethylphosphonates
by nitration of ethoxyvinylphosphonates. References 21: 19 Russian, 2
Western.

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USSR

UDC 547.241

PETROV, K. A., CHAUZOV, V. A., PASTUKHOVA, I. V., and BOGDANOV, N. N.

NITROALKYL ORGANOPHOSPHORUS COMPOUNDS. II. SYNTHESIS AND PROPERTIES OF
 α -NITROISOALKYLPHOSPHONATES

Leningrad ZHURNAL OBSHCHEY KHIMII in Russian Vol 46, No 6, Jun 76 signed
to press 4 Jun 74 pp 1246-1250

[Abstract] This work is dedicated to the search for method of synthesis
of α -nitroalkylphosphonates, based on the use of more available initial
compounds and studies of their chemical properties. A method is developed
for synthesis of α -nitroisoalkylphosphonates by oxidation of aminophosphonates
with potassium permanganate. α -nitroisopropyl- and α -nitro-sec-butylphos-
phonic acid dichlorides are produced; esterification of α -nitropropylphos-
phonic acid produces the dipropyl ester of α -nitroisopropylphosphonic acid.
Hydrolysis of chlorides and esters of α -nitroisopropyl- and α -nitro-sec-
butylphosphonic acids produce α -nitroisopropyl- and α -nitro-sec-butylphos-
phonic acids, separated as aniline salts. Table 1; References 7: 4 Russian,
3 Western.

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USSR

UDC 547.241+547.416

PETROV, K. A., CHAUZOV, V. A., BOGDANOV, N. N., and PASTUKHOVA, I. V.

NITROALKYL ORGANOPHOSPHORUS COMPOUNDS. III. SYNTHESIS OF α -NITROETHYL AND -PROPYLPHOSPHONATES

Leningrad ZHURNAL OBSHCHEY KHIMII in Russian Vol 46, No 6, Jun 76 signed to press 14 Oct 74 pp 1250-1256

[Abstract] It is found that when α -alkyl- β -alkoxyvinylphosphonates interact with acetylnitrate in acetic anhydride, attachment products are formed: dialkyl esters of α -alkyl- α -nitro- β -acetoxy- β -alkoxyethylphosphonic acids. It is shown that when they are treated with bases (KOH, RNa) and acids, the C-C bond is split, forming dialkyl esters of α -nitroalkylphosphonic acids. Figures 2; Table 1; References 7 (Russian).

1/1

USSR

UDC 547'241

PETROV, K. A., CHAUZOV, V. A., and YEROKHINA, T. S.

REGROUPING OF CHLOROMETHYLDIBENZYLPHOSPHINE OXIDE UNDER THE INFLUENCE OF SODIUM METHYLATE

Leningrad ZHURNAL OBSHCHEY KHIMII in Russian Vol 46, No 6, Jun 76 signed to press 14 Oct 74 pp 1256-1259

[Abstract] Data are presented on a new regrouping in the phosphine oxide series -- isomerization of chloromethyldibenzylphosphine oxide under the influence of sodium methylate, including migration of a benzyl group to the carbon atom of the chloromethyl group. It is shown that when chloromethyldibenzylphosphine oxide and sodium methylate interact, intramolecular displacement of the benzyl group from the phosphorus atom to the carbon atom of the chloromethyl group occurs, forming methylbenzyl-2-phenylethylphosphinate. The proposed structure of the product of regrouping is confirmed by hydrolysis, spectroscopic data and reverse synthesis. Figures 2; References 3: 1 Russian, 2 Western.

1/1

USSR

UDC 547.26'118

GOLOBOV, YU. G., BOLDESKUL, I. YE., and SARANA, T. I., The Institute of Organic Chemistry, Academy of Sciences UkSSR

THE MECHANISM OF PHOSPHORAN-PHOSPHATE REGROUPING

Leningrad ZHURNAL OBSHCHEY KHIMII in Russian Vol 46, No 6, Jun 76
signed to press 15 Oct 74 pp 1268-1271

[Abstract] Data are presented produced in a study of the chlorination of N-dichlorophosphino-N-alkylamidodialkylphosphates. IR spectroscopy and the method of isotope labeling (O^{18}) establish the mechanism of phosphoran-phosphate regrouping occurring upon chlorination of O,O-diethyl-N-dichlorophosphino-N-methylamidophosphate. It is shown that this chlorination leads to O-ethyl-N-dichlorophosphatyl-N-methylchlorophosphate, the new P = O bond of which is formed at the oxygen of the phosphoryl group of the initial phosphate. Figure 1; References 7: 4 Russian, 3 Western.

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USSR

UDC 547.20'118

KONOVALOVA, I. V., BURNAYEVA, L. A., SAYFULLINA, N. SH., and PUDOVNIK, A. N., Kazan' State University imeni V. I. Ul'yanov-Lenin

THE REACTION OF TETRAETHYLPYROPHOSPHITES WITH CARBONYL COMPOUNDS

Leningrad ZHURNAL OBSHCHEY KHIMII in Russian Vol 46, No 6, Jun 76 signed
to press 5 Nov 75 p 1410

[Abstract] Results are presented from a study of the reactions of tetraethylpyrophosphite with the methyl ester and nitrile of pyruvic acid. It is shown that the reaction occurs in methylene chloride at a low temperature in an atmosphere of argon forming substituted phosphates. References 3 (Russian).

1/1

USSR

UDC 547.541.6+547.26.118.07

PETROV, K. A., CHAUZOV, V. A., and PASTUKHOVA, I. V.

A SIMPLE METHOD OF SYNTHESIS OF O-(DIALKOXYPHOSPHINYLMETHYL)PHENYLSULFONATES

Leningrad ZHURNAL OBSHCHEY KHIMII in Russian Vol 46, No 6, Jun 76 signed to press 30 Jun 75 p 1413

[Abstract] A two-stage method of preparation of O-(dialkoxyphosphinylmethyl)phenylsulfonates is suggested, based on a modification of the earlier method of their formation from higher dialkyl phosphates. Oxy-methylphosphonates are synthesized by interacting phosphites with an aqueous solution of formaldehyde in the presence of NEt_3 catalyst without a solvent or in dioxane for one day; the product is extracted with ether, the extract is dried and the ether is distilled away. This produces oxymethylphosphonates, which are acylated by the action of PhSO_2Cl and NEt_3 while boiling for two hours in benzene; the benzene solution is washed with water, hydrochloric acid, NaHCO_3 and twice more with water, dried, and the benzene is distilled away. References 2 (Russian).

1/1

USSR

UDC 547.341

YEFANOV, V. A., DOGADINA, A. V., IONIN, B. I., and PETROV, A. A., Leningrad Technological Institute imeni Lensovet

OXIDATIVE CHLOROPHOSPHORYLATION OF ALLYL HALIDES

Leningrad ZHURNAL OBSHCHEY KHIMII in Russian Vol 46, No 6, Jun 76 signed to press 1 Dec 75 pp 1416-1417

[Abstract] The oxidative chlorophosphorylation of allyl chloride leads to preferential formation of 1,3-dichloropropane-2-phosphonic acid dichloride. The interaction of phosphorus trichloride and oxygen with 2-chloro-3-pentene and subsequent dehydrochlorination leads to the formation of 2-chloro-2-pentene-4-phosphonic acid dichloride. The reaction of phosphorus trichloride and oxygen with butadiene hydrochlorides and isoprene forms complex mixtures of compounds containing P-C and P-O-C bonds. When 2,4-dichloro-2-butene is interacted, the main direction of the reaction is breaking of the C=C bond, forming 1,2-dichloroethyldichlorophosphate and acetyl chloride. The interaction of the intermediate radical formed with the phosphorus trichloride is obviously hindered, leading to the formation of the phosphates and breaking of the carbon-carbon bond. References 3: 2 Russian, 1 Western.

1/1

USSR

UDC 678.742.2+746.6.85.4.3.75

DEVITAYEVA, R. S., SEMENOVA, L. S., and BARDEBANOVA, G. V., Department of Plastics Technology, Kazan' Institute of Chemical Technology imeni S. M. Kirov

ON SYNTHESIS OF POLYETHYLENE THIOPHOSPHORIC ACID AND ITS DERIVATIVES

Ivanovo IZVESTIYA VUZov, KHIMIYA I KHIMICHESKAYA TEKHNOLOGIYA in Russian Vol 19, No 7, 1976 signed to press 4 Mar 75 pp 1091-1092

[Abstract] Polyethylene is chemically modified by introducing sulfur that is bound directly to the phosphorus-containing groups of the polymer. The initial polymer was low-density polyethylene (0.91-0.93 g/cc), which was phosphorylated by conventional methods in the presence of aluminum trichloride. Heating the resultant polyethylene phosphinous acid dichlorides with sulfur yielded polyethylene thiophosphonic acid dichlorides, which were converted by water hydrolysis to the corresponding acid. Infrared spectroscopy showed that most of the P=S groups are retained in the polymer. The optimum temperature range for phosphorylation is 65-70°C. The amount of sulfur varied from 1 to 0.25 mole per link of the polyethylene. It was found that with an increase in the initial amount of sulfur, the content in the polymer reaches 9.5%. The amount of phosphorus in the modified

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USSR

DEVITAYEVA, R. S., SEMENOVA, L. S., and BARDEBANOVA, G. V., IZVESTIYA VUZov, KHIMIYA I KHIMICHESKAYA TEKHNOLOGIYA Vol 19, No 7, 1976 pp 1091-1092

polymers is 1.76-4.05%, which agrees with data on Friedel-Crafts phosphorylation. The finished product is a white rubbery mass with characteristic odor that dissolves in decahydronaphthalene, and swells in toluene, benzene, acetone and carbon tetrachloride. The softening temperature is 140-220°C depending on phosphorus content. References 6: 5 Russian, 1 Western.

2/2

USSR

UDC 547.562.1

KOZLOV, N. S., KLEYN, A. G., and GALISHEVSKIY, YU. A., Department of Chemistry, Perm' State Pedagogical Institute

ON THE ROLE OF PHENYL POLYPHOSPHATE IN ALKYLATION OF PHENOLS

Ivanovo IZVESTIYA VUZov, KHIMIYA I KHIMICHESKAYA TEKHOLOGIYA in Russian Vol 19, No 7, 1976 signed to press 19 Sep 76 pp 1029-1031

[Russian abstract provided by the source]

[Text] Phenyl polyphosphate is synthesized by reacting phenol with polyphosphoric acid, and comparative alkylation is done on phenol with cyclohexene in the presence of polyphosphoric acid and phenyl polyphosphate. It is shown that the phosphate is a relatively mild catalyst for the reaction as compared with the free acid, promoting alkylation at the oxygen atom. The use of phenyl polyphosphate as an alkylation catalyst increases the ratio of o- and p-cyclohexylphenols to 2.5 (as against 1.7 for polyphosphoric acid). The catalytic activity of phenyl orthophosphates formed with splitting of the polyphosphoric chain is extremely low. It is established that the phenol bound into the ester with polyphosphoric acid does not enter into the alkylation reaction under the investigated conditions. References 4: 3 Russian, 1 Western.

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USSR

UDC 547.461:546/547.07

RUDAUSKIY, V. P., ZAGNIBEDA, D. M., and NIZHNIKOVA, YE. YE.

TRICHLORO, ALKYL(ARYL)DICHLORO AND DIARYLCHLOROPHOSPHAZO HYDROCARBONS

Kiev KHIMICHESKAYA TEKHOLOGIYA in Russian No 4(88), Jul/Aug 76 pp 23-24

[Abstract] In view of the pronounced biological activity of phosphoric acid derivatives and phosphorylated derivatives of carboxylic acids, the authors have synthesized some trichloro, alkyl(aryl)dichloro and diarylchlorophosphazo hydrocarbons. Phosphorus pentachloride, phosphorus trichloride or red phosphorus and chlorine are reacted with trichlorophosphazocarbacyls or amides of carboxylic acids of the aliphatic group to synthesize trichlorophosphazo hydrocarbons, with alkyl(aryl)dichlorophosphazocarbacyls to synthesize alkyl(aryl)dichlorophosphazo hydrocarbons, and with diarylchlorophosphazocarbacyls to synthesize diarylchlorophosphazo hydrocarbons. The trichlorophosphazo compounds have general formula $RCCl_2N=PCl_3$ where R is CH_2F , CF_3 , CF_3CFCl , CH_3CHCl , CH_3CCl_2 and CH_3CHBr ; alkyl(aryl)dichlorophosphazo $RCCl_2N=PR'Cl_2$ with R and R' paired as follows: CH_3CCl_2 with CCl_3 ; $CH_2ClCHCl$ with C_6H_5 ; CH_2ClCCl_2 with CCl_3 and with C_6H_5 ; diarylchlorophosphazo $RCCl_2N=PAR_2Cl$ where R is $Ar=C_6H_5$, CCl_3 , CH_3CHCl , $CH_2ClCHCl$, CH_3CCl_2 and CH_2ClCCl_2 . References 6 Russian.

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USSR

UDC 542.91:547.1'118

ARBUZOV, B. A., BOGONOSTSEVA, N. P., VINOGRADOVA, V. S., and BATYRSHIN, N. N., Chemistry Institute imeni A. M. Butlerov, Kazan' State University imeni V. I. Ul'yanov-Lenin

INTERACTION OF DIALKYL PHOSPHOROUS ACIDS WITH 2-METHYLINDANDIONE-1,3

Moscow IZVESTIYA AKADEMII NAUK SSSR, SERIYA KHIMICHESKAYA in Russian No 5, May 76 signed to press 19 May 75 pp 1119-1124

[Abstract] 2-Methylindandione-1,3 reacts with dialkyl phosphorous acids in the presence of triethylamine at $\sim 20^{\circ}\text{C}$ to form 2-methyl-3-hydroxyindanon-1-yl-3-dialkyl phosphonates. These compounds isomerize to the corresponding phosphates when the reaction mixture is allowed to stand. 2-Methyl-3-hydroxyindanon-1-yl-3-dialkyl phosphonates are converted by the action of thionyl chloride to 2-methylinden-2-on-1-yl-3-dialkyl phosphonates. At 160°C complex interaction takes place between 2-methylindandione-1,3 and diethyl phosphorous acid with an excess of triethylamine, forming 2-methylinden-2-on-1-yl-3-diethyl phosphate and a series of products that do not contain phosphorus. Unsaturated dialkyl phosphates are also synthesized from 2-bromo-2-methylindandione-1,3 and trialkyl phosphites.
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USSR

ARBUZOV, B. A., BOGONOSTSEVA, N. P., VINOGRADOVA, V. S., and BATYRSHIN, N. N., IZVESTIYA AKADEMII NAUK SSSR, SERIYA KHIMICHESKAYA No 5, May 76 pp 1119-1124

2-Methylinden-2-one-1 reacts with diethyl phosphorous acid in the presence of triethylamine to form 2-methyl-1-hydroxyinden-2-yl-1-diethyl phosphonate. Tables 3; References 7: 4 Russian, 3 Western.

2/2

CHERKASOV, R. A., OVCHINNIKOV, V. V., and PUDOVIK, A. N., Kazan' State University imeni V. I. Ul'yanov-Lenin

REACTIVITY OF CYCLIC DITHIOPHOSPHORUS ACIDS IN REACTIONS WITH UNSATURATED ORGANOPHOSPHORUS COMPOUNDS

Leningrad ZHURNAL OBSHCHEY KHIMII in Russian Vol 46(108), No 5, May 76 signed to press 28 Aug 74 pp 957-963

[Abstract] The authors study the addition of cyclic acids to unsaturated systems such that the cyclic fragment has minimum influence on reaction rate. The cyclic dithiophosphorus acids were reacted with vinyl derivatives of pentavalent phosphorus. Diphenyl, phenylethyl and diethylvinyl phosphine oxides and α -carbethoxystyryldiethyl phosphonate were reacted with equimolecular amounts of alkylene dithiophosphoric acids in para-xylene or chlorobenzene for 2-3 hours without catalysts at 60-90°C. The adducts are viscous liquids that do not distill in deep vacuum, or crystals. It was found that alkylene dithiophosphates are more active in addition of dithiophosphorus acids to unsaturated organophosphorus compounds than are their acyclic analogs. It is shown that the nucleophilic activity of cyclic dithiophosphates is less pronounced than in open dithiophosphates.

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USSR

CHERKASOV, R. A., OVCHINNIKOV, V. V., and PUDOVIK, A. N., ZHURNAL OBSHCHEY KHIMII Vol 46(108), No 5, May 76 pp 957-963

Kinetic and spectral studies and analysis of the influence of solvents on reaction rates in addition of cyclic dithiophosphorus acids to unsaturated organophosphorus compounds confirm the conclusions drawn from previous research on the mechanism of these interactions. Tables 4; References 16: 14 Russian, 2 Western.

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USSR

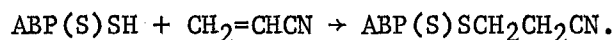
UDC 547.26'118

CHERKASOV, R. A., KUTYREV, G. A., OVCHINNIKOV, V. V., and PUDOVIK, A. N.,
Kazan' State University imeni V. I. Ul'yanov-Lenin

ON THE MECHANISM OF REACTION OF DITHIOPHOSPHORUS ACIDS WITH ACRYLONITRILE

Leningrad ZHURNAL OBSHCHEY KHIMII in Russian Vol 46(108), No 5, May 76
signed to press 28 Aug 74 pp 963-966

[Abstract] The ease with which dithiophosphorus acids are added to unsaturated electrophilic systems without catalysis is due to pronounced electrophilic and nucleophilic functions. It has been suggested that dithiophosphorus acids react with acrylonitrile by a mechanism of interaction with a cyclic transitional state where both functions of the acid participate. In this paper the authors study the mechanism of this reaction and explain the relative role of the acidic and nucleophilic properties of dithiophosphates in the cyanoethylation reaction



It is shown that the influence of solvents on the rate of reaction of dithiophosphorus acids with acrylonitrile agrees with the cyclic nature
1/2

USSR

CHERKASOV, R. A., KUTYREV, G. A., OVCHINNIKOV, V. V., and PUDOVIK, A. N.,
ZHURNAL OBSHCHEY KHIMII Vol 46(108), No 5, May 76 pp 963-966

of the transitional state. It is found that cyclic and acyclic dithio acids belong to different reaction series in the cyanoethylation reaction, which is due to the conformational peculiarities of dithio acids. Figure 1; Tables 2; References 11: 7 Russian, 4 Western.

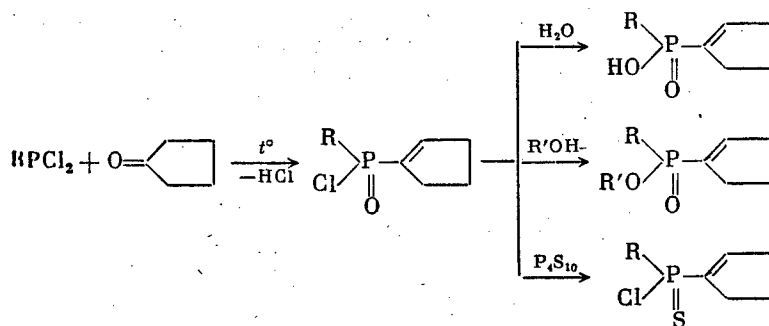
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NURTDINOV, S. KH., ISMAGILOVA, N. M., ZYKOVA, T. V., SABIROVA, K. G., and TSIVUNIN, V. S., Kazan' Institute of Chemical Technology imeni S. M. Kirov

ON THE INTERACTION OF CHLORIDES OF TRIVALENT PHOSPHORUS ACIDS WITH CYCLIC KETONES

Leningrad ZHURNAL OBSHCHEY KHIMII in Russian Vol 46(108), No 5, May 76 signed to press 8 Jul 74 pp 1007-1011

[Abstract] Ethyldichlorophosphine and phenyldichlorophosphine are reacted with cyclohexanone and cyclopentanone. The primary chlorophosphines react with cyclopentanone in equimolar proportions to give alkyl(aryl)cyclopent-1-ylphosphinic acid chlorides. When treated with water, alcohols and phosphorus pentasulfide, the resultant chlorides form the respective derivatives.



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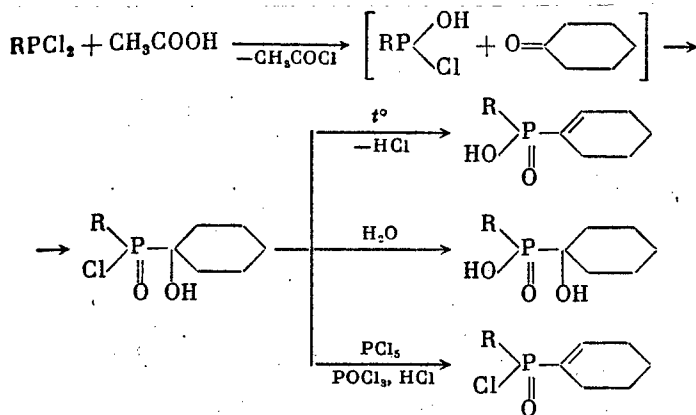
NURTDINOV, S. KH., ISMAGILOVA, N. M., ZYKOVA, T. V., SABIROVA, K. G., and TSIVUNIN, V. S., ZHURNAL OBSHCHEY KHIMII Vol 46(108), No 5, May 76 pp 1007-1011

Interaction of ethyldichlorophosphine with cyclohexanone in equimolar proportions gives ethylcyclohexen-1-ylphosphinic acid chloride, but with a low yield. Treating the reaction mixture with water gives alkyl (or aryl)- α -hydroxycycloalkylphosphinic acids, while phosphorus pentachloride treatment followed by vacuum distillation gives alkyl-, arylcycloalken-1-ylphosphinic acid chlorides. Reaction of phenyldichlorophosphine with cyclohexanone gives phenyl- α -hydroxycyclohexylphosphinic acid chloride. Treatment with water gives the acid.

2/3

USSR

NURTDINOV, S. KH., ISMAGILOVA, N. M., ZYKOVA, T. V., SABIROVA, K. G., and TSIVUNIN, V. S., ZHURNAL OBSHCHEY KHIMII Vol 46(108), NO 5, May 76 pp 1007-1011



If phenyldichlorophosphine is reacted with an equimolar mixture of cyclohexanone and acetic acid, phenylcyclohexen-1-ylphosphinic acid is formed. A table is given summarizing the constants of the synthesized products. Figure 1; Tables 2; References 5 Russian.

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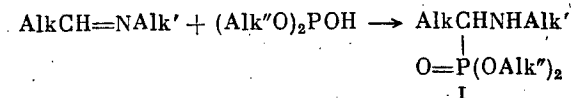
UDC 547.573

PAK, V. D., KOZLOV, N. S., BALKOVA, I. A., and GARTMAN, G. A., Perm' Agricultural Institute imeni D. N. Pryanishnikov

REACTION OF ALIPHATIC SCHIFF BASES WITH DIALKYL PHOSPHITES

Leningrad ZHURNAL OBSHCHEY KHIMII in Russian Vol 46(108), No 5, May 76 signed to press 18 Jul 74 pp 1012-1015

[Abstract] Aliphatic azomethynes are reacted with dialkyl phosphites. It is found that the main reaction products are aminophosphonic diesters.

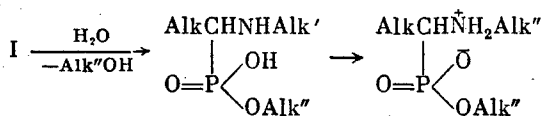


The esters are oily transparent or light yellow liquids with an unpleasant odor. When boiled in 96% alcohol or stored for a long period, the aminophosphonic diesters are hydrolyzed to form aminophosphonic monoesters.

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USSR

PAK, V. D., KOZLOV, N. S., BALKOVA, I. A., and GARTMAN, G. A., ZHURNAL
OBSHCHEY KHIMII Vol 46(108), No 5, May 76 pp 1012-1050



The monoesters are solid white crystals with fairly high melting point. They dissolve easily in alcohol and 1,4-dioxane. Figures 2; Tables 2; References 5 Russian.

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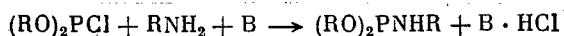
UDC 547.26'118

NIKONOROVA, L. K., GRECHKIN, N. P., and NURETDINOV, I. A., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Kazan' Affiliate of the Academy of Sciences USSR

ALKYLAMIDES OF DIALKYL PHOSPHOROUS ACIDS AND THEIR PROPERTIES

Leningrad ZHURNAL OBSHCHEY KHIMII in Russian Vol 46(108), No 5, May 76 signed to press 30 Sep 74 pp 1015-1018

[Abstract] Alkylamides of dialkyl phosphorous acids are synthesized by reacting dialkyl chlorophosphites with primary amines in the presence of a base.



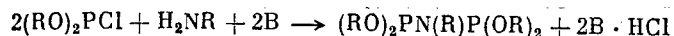
A tertiary amine such as triethylamine or an excess of alkylamine may be used as the base. The resultant amides are liquids that distill readily in vacuum and are highly sensitive to humidity. In some experiments a high-boiling residue was observed that did not show IR absorption corresponding to the N-H group. Special experiments confirmed the hypothesis that part of the amide reacts with the initial dialkyl chlorophosphite in the presence of the base to form compounds containing the P-N-P group. When a dialkyl

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USSR

NIKONOROVA, L. K., GRECHKIN, N. P., and NURETDINOV, I. A., ZHURNAL OBSHCHEY KHMII Vol 46(108), No 5, May 76 pp 1015-1018

chlorophosphite is reacted with an alkylamine in the presence of a base in the ratio 2:1:2, the corresponding N-alkylamide of bis-dialkyl phosphorous acid is formed.



The same products are produced by reacting dialkyl chlorophosphites with N-alkylamides of dialkyl phosphorous acids in the presence of a base.



These products are colorless fairly low-boiling liquids that dissolve readily in organic solvents. Figures 1; Tables 2; References 8: 3 Russian, 1 Polish, 4 Western.

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USSR

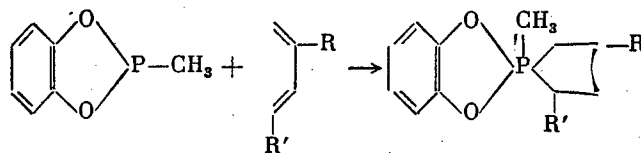
UDC 547.26'118

KURSHAKOVA, N. A., and RAZUMOVA, N. A., Leningrad Technological Institute imeni Lensovet

PHOSPHORUS-CONTAINING HETEROCYCLICS. SYNTHESIS AND INVESTIGATION OF THE PROPERTIES OF 1,1-PYROCATECHOL-1-METHYL-3-PHOSPHOLINES

Leningrad ZHURNAL OBSHCHEY KHMII in Russian Vol 46(108), No 5, May 76 signed to press 14 Nov 74 pp 1027-1031

[Abstract] Pyrocatechol esters of methylphosphonous acid are condensed with 1,3-butadiene, isoprene and piperylene.



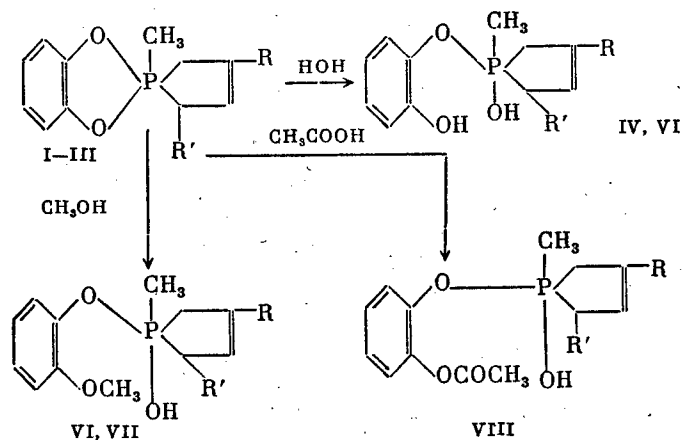
As a result, compounds with a pentavalent phosphorus atom are synthesized: 1,1-pyrocatechol-1-methyl-3-phospholine (I), 1,1-pyrocatechol-1,3-dimethyl-3-phospholine (II), 1,1-pyrocatechol-1,2-dimethyl-3-phospholine (III). The

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USSR

KURSHAKOVA, N. A., and RAZUMOVA, N. A., ZHURNAL OBSHCHEY KHIMII Vol 46(108), No 5, May 76 pp 1027-1031

authors studied hydrolysis, alcoholysis and acetolysis of compounds I-III. These reactions give compounds IV-VIII:



2/3

USSR

KURSHAKOVA, N. A., and RAZUMOVA, N. A., ZHURNAL OBSHCHEY KHIMII Vol 46(108), No 5, May 76 pp 1027-1031

Hydrolysis of the phospholines with an excess of water in the presence of hydrochloric acid yielded 1-methyl-3-phospholine-1-oxide (IX) and pyrocatechol. IR and NMR spectroscopic analysis of IX shows that the compound with pentavalent phosphorus atom is converted to one with a tetracoordinated phosphorus atom. Tables 2; References 7: 6 Russian, 1 Western.

3/3

BODNARCHUK, N. D., and MOMOT, V. V., Institute of Organic Chemistry, Academy of Sciences UkrSSR

TRIPHENYLPHOSPHAZOPERHALOTHANES

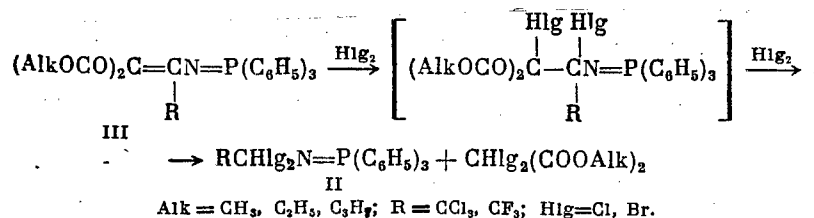
Leningrad ZHURNAL OBSHCHEY KHIMII in Russian Vol 46(108), No 5, May 76
signed to press 10 Feb 75 pp 1031-1034

[Abstract] In trichlorophosphazo- α,α -dichloroalkanes (I) the chlorine atoms attached to the α -carbon atom in the alkyl radical are more active than the chlorine atoms attached to the phosphorus atom. We should expect that when phenyl radicals replace the chlorine atoms attached to the phosphorus, the mobility of the chlorine atoms attached to the α -carbon would be further enhanced. The research described in this paper concerns attempts to synthesize the first representatives of triorganylphosphazoperhaloalkanes -- triphenylphosphazoperhalothanes (II). These compounds were produced by the action of chlorine or bromine on benzene solutions of 1-triphenylphosphazo-1-trichloro(trifluoro)-methyl-2,2-dicarboalkoxyethylenes (III).

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USSR

BODNARCHUK, N. D., and MOMOT, V. V., ZHURNAL OBSHCHEY KHIMII Vol 46(108), No 5, May 76 pp 10-31

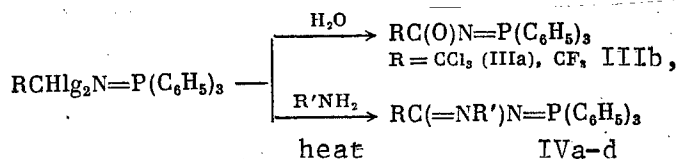


Phosphazo compounds containing the dichloromethyl group in the α -position also chlorinate with the formation of triphenylphosphazoperchloroethane (IIa). The compounds are yellow or orange crystals that are soluble in polar organic solvents and insoluble in hexane, benzene, ether or carbon tetrachloride. They are rapidly hydrolyzed by moist air. They react readily with water, para-chloroaniline and benzenesulfamide.

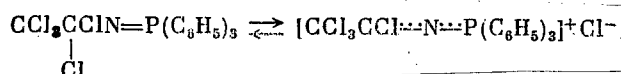
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USSR

BODNARCHUK, N. D., and MOMOT, V. V., ZHURNAL OBSHCHEY KHIMII Vol 46(108), No 5, May 76 pp 1031-1034



A study of the infrared spectra and measurement of the electric conductivity of compound IIa showed that in addition to the covalent structure, phosphazohexachloroethane IIa also exists in the ionic form.



Figures 1; Table 1; References 5 Russian.

3/3

USSR

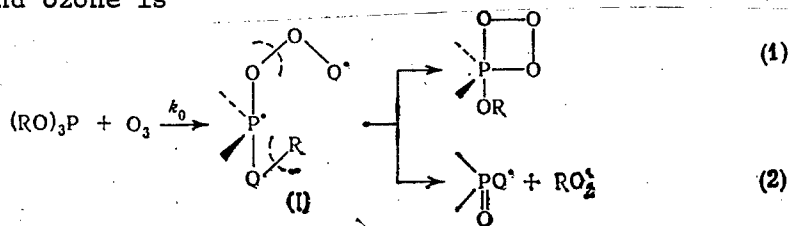
UDC 541.67:542.91:547.1'118:546.214

POBEDIMSKIY, D. G., KURBATOV, V. A., GOL'DFARB, E. P., and BUCHACHENKO, A. L., Institute of Chemical Physics, Academy of Sciences USSR, Moscow, Institute of Physical and Organic Chemistry imeni A. Ye. Arbuzov, Kazan' Affiliate of the Academy of Sciences USSR, Kazan' Institute of Chemical Technology imeni S. M. Kirov

CHEMICAL POLARIZATION OF NUCLEI. REPORT 4. INTERACTION OF ORGANIC PHOSPHITES WITH OZONE

Moscow IZVESTIYA AKADEMII NAUK SSSR, SERIYA KHIMICHESKAYA in Russian No 5, May 76 signed to press 4 Jun 75 pp 1006-1011

[Abstract] A systematic examination is made of the kinetics of the reaction of various phosphites with ozone by the ^{31}P NMR method and by the chemical polarization of ^{31}P nuclei. The mechanism of the reaction for trialkyl phosphites and ozone is

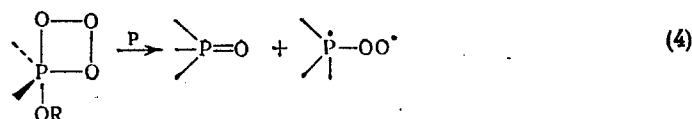
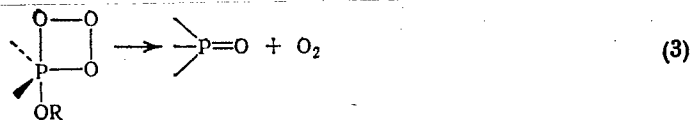


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USSR

POBEDIMSKIY, D. G., KURBATOV, V. A., GOL'DFARB, E. P., and BUCHACHENKO, A. L.,
IZVESTIYA AKADEMII NAUK SSSR, SERIYA KHIMICHESKAYA No 5, May 76 pp 1006-1011

The first path leads to the ozonide, while the second path creates radicals with disproportionation and dissociation of biradical (I). The resultant ozonide may also react by two paths:

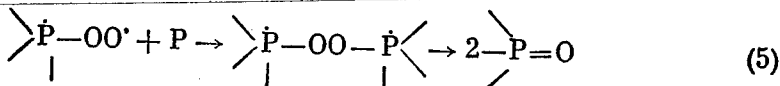


The first path is monomolecular dissociation that takes place without the formation of radicals, while the second path involves interaction of the ozonide with a phosphite molecule forming a biradical that then attaches to a phosphite with formation of phosphates.

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USSR

POBEDIMSKIY, D. G., KURBATOV, V. A., GOL'DFARB, E. P., and BUCHACHENKO, A. L.,
IZVESTIYA AKADEMII NAUK SSSR, SERIYA KHIMICHESKAYA No 5, May 76 pp 1006-1011



Reactions (1) and (3)-(5) are the principal mechanism of the interaction, and (2) is secondary. Figures 3; Table 1; References 14: 11 Russian, 3 Western.

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MEDVED', T. YA., DYATLOVA, N. M., MARKHAYEVA, V. P., RUDOMINO, M. V.,
CHURILINA, N. V., POLIKARPOV, YU. M., and KABACHNIK, M. I., Institute of
Organoelemental Compounds, Academy of Sciences USSR, Moscow, Institute of
Chemical Reagents and Ultrapure Materials, Moscow

SYNTHESIS AND COMPLEXING PROPERTIES OF NITROGEN-METHYLATED ETHYLENEDIAMINE
N,N'-DIMETHYL AND ETHYLENEDIAMINE N,N'-DIETHYL PHOSPHONIC ACIDS

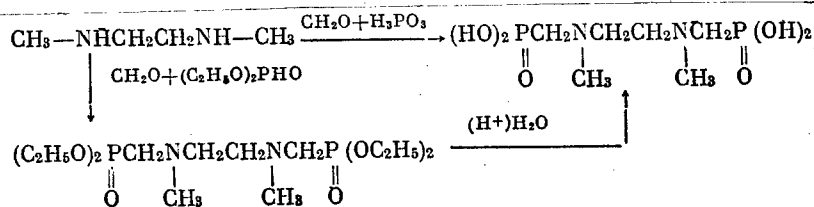
Moscow IZVESTIYA AKADEMII NAUK SSSR, SERIYA KHIMICHESKAYA in Russian No 5,
May 76 signed to press 23 May 75 pp 1018-1023

[Abstract] The authors synthesize and investigate N,N-dimethyl-ethylenedia-
mine N,N'-dimethyl phosphonic, ethylenediamine N,N'-diethyl phosphonic and
N,N' dimethylethylenediamine N,N'-diethyl phosphonic acids, and also the
methiodide of the latter acid. N,N'-dimethylethylenediamine N,N'-dimethyl
phosphonic acid is synthesized by condensation of N,N'-dimethylethylenediamine
with diethyl phosphite and paraformaldehyde followed by saponification of the
resultant ester, and also by condensing the diamine with formaldehyde and
phosphorous acid.

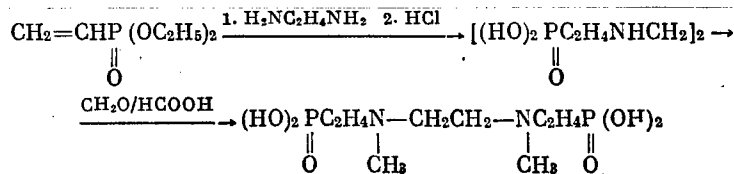
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USSR

MEDVED', T. YA., DYATLOVA, N. M., MARKHAYEVA, V. P., RUDOMINO, M. V.,
CHURILINA, N. V., POLIKARPOV, YU. M., and KABACHNIK, M. I., IZVESTIYA
AKADEMII NAUK SSSR, SERIYA KHIMICHESKAYA No 5, May 76 pp 1018-1023



Complexing agents with the ethylene bridge between the nitrogen and phosphorus
atoms are synthesized by reacting diethylvinyl phosphonate with ethylenedia-
mine followed by saponification of the ester and methylation of the ethyl-
enediamine N,N'-diethyl phosphonic acid with formaldehyde and formic acid.

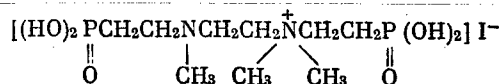


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USSR

MEDVED', T. YA., DYATLOVA, N. M., MARKHAYEVA, V. P., RUDOMINO, M. V.,
CHURILINA, N. V., POLIKARPOV, YU. M., and KABACHNIK, M. I., IZVESTIYA
AKADEMII NAUK SSSR, SERIYA KHIMICHESKAYA No 5, May 76 pp 1018-1023

Alkylation of N,N'-dimethylethylenediamine N,N'-dimethyl phosphonic acid
with an excess of CH₃I gives the monomethiodide.



The acid and complexing properties of the compounds are studied by pH-
potentiometric titration. Tables are given summarizing the constants of
acid dissociation of the compounds and constants of stability of complexes
with nickel, copper, dysprosium and uranyl. Figures 4; Tables 2;
References 12: 6 Russian, 6 Western.

3/3

USSR

UDC 542.91:541.49:547.1'118

MARKHAYEVA, V. P., RUDOMINO, M. V., POLIKARPOV, YU. M., MEDVED', T. YA.,
DYATLOVA, N. M., and KABACHNIK, M. I., Institute of Organoelemental Compounds,
Academy of Sciences USSR, Moscow, Institute of Chemical Reagents and Ultra-
pure Materials, Moscow

SYNTHESIS AND COMPLEXING PROPERTIES OF HYDROXY SUBSTITUTED ETHYLENEDIAMINE DIALKYL PHOSPHONIC ACIDS

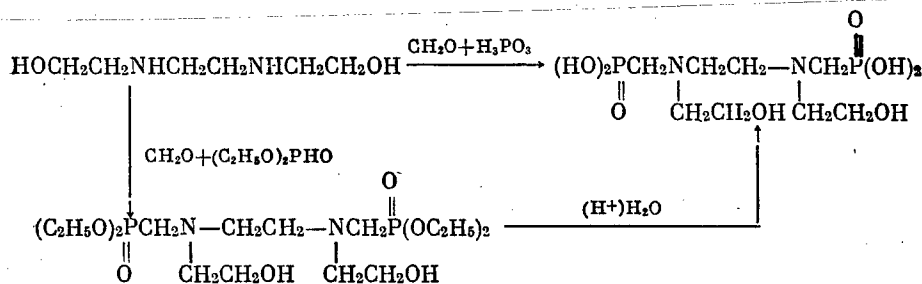
Moscow IZVESTIYA AKADEMII NAUK SSSR, SERIYA KHIMICHESKAYA in Russian No 5,
May 76 signed to press 23 May 75 pp 1024-1028

[Abstract] This research continues the authors' studies of complexing of
ethylenediamine dialkyl phosphonic acids with alkyl substituents attached
to the nitrogen atoms. A complexing agent with the hydroxyethyl group is
synthesized and investigated -- N,N'-di-(2-hydroxyethyl) ethylenediamine
dimethyl phosphonic acid. The synthesis involves condensation of N,N'-
di-(2-hydroxyethyl) ethylenediamine with paraformaldehyde and diethyl
phosphite followed by saponification of the resultant ester, or condensation
of the amine with formalin and phosphorous acid

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USSR

MARKHAYEVA, V. P., RUDOMINO, M. V., POLIKARPOV, YU. M., MEDVED', T. YA.,
DYATLOVA, N. M., and KABACHNIK, M. I., IZVESTIYA AKADEMII NAUK SSSR, SERIYA
KHIMICHESKAYA No 5, May 76 pp 1024-1028



The complexing and acid properties of the compound are studied by potentiometric and high-frequency titration and by spectrophotometry. Tables are given summarizing acid dissociation constants and constants of stability of complexes with calcium, nickel, copper, uranyl, dysprosium and iron. Figures 3; Tables 2; References 14: 7 Russian, 7 Western.

2/2

USSR

UDC 542.952.1:547.1'118

BATYYEVA, E. S., AL'FONSOV, V. A., KAUFMAN, M. Z., and PUDOVNIK, A. N.,
Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Kazan'
Affiliate, Academy of Sciences USSR

ON ISOMERIZATION OF β -PROPIOLACTONE UNDER THE ACTION OF TRIVALENT PHOSPHORUS
ACID AMIDES

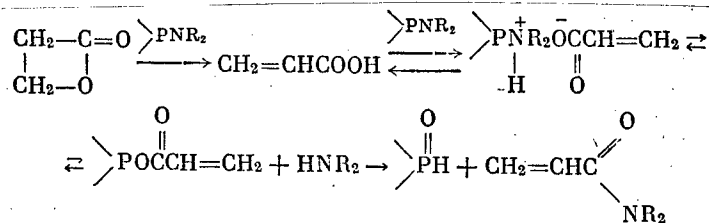
Moscow IZVESTIYA AKADEMII NAUK SSSR, SERIYA KHIMICHESKAYA in Russian No 5,
May 76 signed to press 16 Feb 76 pp 1193-1194

[Abstract] Hexamethyltriamide phosphite (I) reacts with β -propiolactone (II) forming tetramethyldiamide phosphite (III) and dimethylamide of acrylic acid (IV). The formation of these products is attributed to isomerization of β -propiolactone under the action of the amido phosphite into acrylic acid followed by interaction with amide (I) forming (III) and (IV). In addition, the reaction of I with II gives phosphonium betaine which indicates parallel interaction through the phosphorus atom of the amido phosphite.

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USSR

BATYYEVA, E. S., AL'FONSOV, V. A., KAUFMAN, M. Z., and PUDOVİK, A. N.,
IZVESTIYA AKADEMII NAUK SSSR, SERIYA KHIMICHESKAYA No 5, May 76 pp 1193-1194



Analogous reaction of 0,0-diethyl-N,N-diethylamide phosphite with lactone (II) gives diethylacroyl phosphite, diethyl phosphorous acid, diethylamide of acrylic acid and O-ethyl-N,N-diethylamide-β-carboethoxyethyl phosphonate, which are products formed when an amido phosphite interacts with acrylic acid. The results can be used to explain the mechanism of reactions of amido phosphites with β-lactone. References 4: 3 Russian, 1 Western.

2/2

Pharmacology and Toxicology

USSR

UDC 614.72:615.285.7:547.241]-074

UBAYDULLAYEV, R., and KAMIL'DZHANOV, A. KH., Uzbek Scientific Research Institute for Sanitation, Hygiene and Occupational Diseases, Tashkent

THE TOXICOLOGY OF LOW CONCENTRATION OF PHOZALON IN THE ATMOSPHERE

Moscow GIGIYENA I SANITARIYA in Russian No 7, Jul 76 signed to press
17 Jun 75 pp 10-14

[Abstract] A study is made of the reflex and resorptive effect of low concentrations of the French organophosphorus preparation phozalon, used as a contact insecticide to control fruit and citrus fruit, cotton, grape and other pests. The odor detection threshold and reflex action on the electric activity of the human brain were determined, studying concentrations ranging from 0.185 to 0.037 mg/m³. The odor detection threshold was found to be at 0.049 mg/m³, while 0.037 mg/m³ was undetectable. The maximum effective concentration of phozalon on cerebral electric activity was 0.021 mg/m³, while 0.012 mg/m³ was ineffective. It is recommended that the maximum one-time and mean daily permissible concentration of phozalon in the air of populated areas be at the same level, 0.01 mg/m³. Table 1; References 6 (Russian).

1/1

USSR

UDC 613.32:678.744

TROFIMOVICH, YE. M., STRUSEVICH, YE. A., and KOLESNIKOV, P. A., candidates of medical sciences, and KAZANIN, V. I., YANYGINA, L. F., and MOLCHANOVA, M. A., Novosibirsk Scientific Research Institute for Sanitation

PERMISSIBLE CONTENT OF THE FLOCCULANT POLYOXYETHYLENE IN WATER RESERVOIRS

Moscow GIGIYENA I SANITARIYA in Russian No 7, Jul 76 signed to press
1 Dec 75 pp 23-25

[Abstract] The flocculant polyoxyethylene is a high molecular linear polymer of ethylene oxide. With a molecular weight of over 1 million, it is a crystalline substance with a water solubility of about 20 g/l. The present study was performed with POE with molecular weights of 2 to 5 million, produced by catalytic polymerization of ethylene oxide in gasoline at 25 C: it is a white powder with a very weak odor. It gives no characteristic odor or taste to fresh water; a mild, nonspecific aromatic odor to chlorinated water. In connection with its surfactant properties, POE was studied for foam formation in water. The threshold concentration for foam formation was found to be 0.125 (for mw 2 million), 0.1 (for mw 3 million) and 0.02 (for mw 5 million) mg/l. The cumulative properties of the flocculant in subacute doses were studied on the basis of the functional indicators of

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USSR

TROFIMOVICH, YE. M., STRUSEVICH, YE. A., KOLESNIKOV, P. A., KAZANIN, V. I., YANYGINA, L. F., and MOLCHANOVA, M. A., GIGIYENA I SANITARIYA No 7, Jul 76 pp 23-25

the body of small experimental animals. It was found that POE with molecular weights of 2 to 5 million causes no acute intoxication, is noncumulative and with chronic administration per os has no specific effect on the body. In a chronic experiment, a dose of 100 mg/kg does cause damage to the parenchyma of the liver and the nephronic tubules. The limiting factor for establishment of the MPC of POE in water is its organoleptic (foam formation) property. Table 1; References 2: 1 Russian, 1 Western.

2/2

USSR

UDC 628.345.33:614.777

KINZIRSKIY, A. S., Department of Communal Hygiene, First Moscow Medical Institute imeni I. M. Sechenov

HYGIENIC DESCRIPTION OF THE NEW FLOCCULANT POLYETHYLENEIMINE AND ITS NORMALIZATION IN RESERVOIRS

Moscow GIGIYENA I SANITARIYA in Russian No 7, Jul 76 signed to press 25 Nov 75 pp 19-23

[Abstract] Experiments were performed on white mice, rats and guinea pigs to study the acute toxicity of various specimens of polyethyleneimine (PEI) when administered per os. Calculation of the LD₅₀ by the methods of Litchfield and Wilcoxon, Deichman and Le Blanc show that all the specimens studied are moderately toxic. The acute experiments showed no species or sex sensitivity of small laboratory animals to different specimens of the flocculant. The clinical picture of acute poisoning is characteristic for central nervous system damage. The compound is found to have rather clearly expressed cumulative properties. Under the experimental conditions, there is no specific influence on the reproductive function of male white rats and no cytogenetic activity was found in experiments on bone marrow cell. The maximum permissible concentration of PEI is established at 0.1 mg/l.

Tables 3; References 8 (Russian).

1/1

USSR

UDC 615.285.7.015.4:612.646+612.646.014.46:615.285.7

KONSTANTINOVA, T. K., Institute of Rural Hygiene, Saratov

EFFECT OF THE HERBICIDE 2,4,5-T BUTYL ETHER APPLIED AT DIFFERENT TIMES
OF GESTATION OF THE EMBRYOGENESIS OF ALBINO RATS

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA [Labor Hygiene and
Occupation Diseases] in Russian No 8, Aug 76 signed to press 29 Oct 75
pp 15-19

[Abstract] Administration of 0.1 mg/kg dose of 2,4,5-T butyl ether by
gavage results in an embryotoxic effect over the entire gestation period
(from the first to the 20th day). The embryos are most sensitive to
development of anomalies when the agent is introduced during the 7-8,
9-10, 11-12 or 13-14 days of gestation. It is suggested that experimental
studies of embryotropic and teratogenic effects of various chemicals should
be concerned not only with the entire, overall period of pregnancy, but also
with separate, individual sub-periods of several days duration. References
16: 11 Russian, 5 Western.

1/1

USSR

UDC 616.24.-003.66-06:616.155.321.02-076.5

SHPAKOVA, A. P., and SOKOLOV, V. V., Institute of Labor Hygiene and
Occupational Diseases, Academy of Medical Sciences USSR, Moscow

NORMAL BLOOD LYMPHOCYTES BLAST TRANSFORMATION IN PATIENTS WITH BERYLLIOSIS
AND SILICOSIS

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA [Labor Hygiene and
Occupational Diseases] in Russian No 8, Aug 76 signed to press 19 May 75
pp 19-22

[Abstract] A tendency towards reduced blast transformation of lymphocytes
against phytohemagglutinin (PHA) was apparent in patients with berylliosis
and tuberculosilicosis. This depression was observed in patients with
extensive progressive process in the lungs occurring concurrently in
response to two PHA doses--subtoxic and one slightly lower. The resulting
changes point to a diminished subpopulation of the T-cells in these
patients, which may serve as a proof of reactions responsible for the
cellular immunity to be involved in pathological processes. Figures 2;
References 13: 9 Russian, 4 Western.

1/1

USSR

UDC 616-057:622.24

NABIYEVA, G. V., Institute of Hygiene and Occupational Diseases, Ufa

OCCUPATIONAL PATHOLOGY OF WORKERS ENGAGED IN DRILLING OIL WELLS

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA [Labor Hygiene and Occupational Diseases] in Russian No 8, Aug 76 signed to press 31 Oct 75 pp 22-24

[Abstract] Occupational pathology of arms was observed among workers engaged in sinking oil wells, manifested by several clinical forms: vegetative polyneuritis, brachial epicondylitis and osteochondrosis of the cervical spine. About half of all problems concerned complex forms of brachial diseases due to the stress on brachial and shoulder girdle muscles, continued uniform movements of brachial joints and cervical spine, local vibration and general cooling of that area of the body. No figures, tables or references.

1/1

USSR

UDC 615.916:546.815]015.25:547.292

OKONISHNIKOVA, I. YE., ROZENBERG, YE. YE., and REZINA, I. A., Institute of Labor Hygiene and Occupational Diseases, Sverdlovsk

THERAPEUTIC-PROPHYLACTIC ACTION OF SUCCIMER IN EXPERIMENTAL SUBACUTE POISONING WITH LEAD ACETATE

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA [Labor Hygiene and Occupational Diseases] in Russian No 8, Aug 76 signed to press 7 Jul 75 pp 24-28

[Abstract] Succimer--meso-dimercaptosuccinic acid--helps in removing from the organism the freely circulating metal as well as that already deposited in tissues and bones. In animal experiments doses of 5 mg/kg were used, administered subcutaneously for three weeks, daily. Depending on the application, succimer prevents the emergence and development of disorders in porphyrin and protein metabolism, or contributes to their normalization. With PO or parenteral administration succimer is effective to the same extent. Prophylactic action of succimer is highest when applied twice at the day of poisoning. Figures 2; Tables 3; References 13: 9 Russian, 4 Western.

1/1

USSR

UDC 613.633:[621.311.21:622.354.1

DROZDENKO, L. A., POVAROV, A. V., SHPIN'KOVA, N. S., (Tallin), PLISYUGINA, G. A., and MERKUR'YEV, YU. M. (Narva) Republican and Municipal Sanepid-station, Gorzdravotdel (Municipal Department of Health)

HYGIENIC EVALUATION OF THE ATMOSPHERIC ENVIRONMENT AND HEALTH STATUS OF WORKERS DOING REPAIRS INSIDE BOILERS AT THE ESTONIAN REGIONAL ELECTRIC POWER STATION

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA [Labor Hygiene and Occupational Diseases] in Russian No 8, Aug 76 signed to press 5 Sep 75 pp 29-31

[Abstract] The modern technology of boiler repairs leads to contamination of air within the work area with dust of the combusted fuel and aerosols which develop during welding and fitting operations. The principal contributor is the combustible shale ash dust. Medical examinations identified a group of workers with suspected dust-induced bronchitis of occupational etiology, this diagnosis being confirmed by an in-depth examination of clinical and occupational diseases by the Ministry of Health of the Estonian SSR. To rectify this situation a recommendation has been made to automate the interior processes to the maximum extent and to make it mandatory to use individual protective masks. Table 1; Reference 1.

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USSR

UDC 615.917:547.391.3].07:616.1/.4

DOROFYEVA, YE. D., Institute of Labor Hygiene and Occupational Diseases, Gor'kiy

SOME CHANGES IN THE INTERNAL ORGANS OF WORKERS EXPOSED TO THE EFFECT OF METHYL METHACRYLATE

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA [Labor Hygiene and Occupational Diseases] in Russian No 8, Aug 76 signed to press 30 Sep 75 pp 31-35

[Abstract] Study of the health conditions of 225 workers exposed to the effects of methyl methacrylate showed that in addition to pathology of nervous system, changes in the internal organs were taking place directly related to the longevity of service. These changes included tendency toward anemia and leucopenia, absolute lymphopenia and monocytosis, changes in liver function capacity resulting from disturbed functions of proteidogenous, fat-lipid and carbohydrate metabolism, and in more severe cases even toxic lesions of the liver, pathology of the cardiovascular system, etc. Tables 3; References 17: 14 Russian, 3 Western.

1/1

USSR

UDC 615.916:661.868.3

SHABALINA, L. P., and SPIRIDONOVA, V. S., First Moscow Medical Institute
imeni I. M. Sechenov

TOXICITY OF THALLIUM FORMICMALONATE

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA [Labor Hygiene and
Occupational Diseases] in Russian No 8, Aug 76 signed to press 26 Sep 75
pp 35-37

[Abstract] Thallium has been shown to be capable under production conditions
of entering the bodies of the workers, the dermal route being the principal
entry. The LD₅₀ of TFM is 18.8 (15.5-22.1) mg/kg for the gavage administration,
and 57.7 (48.2-67.2) mg/kg in case of the percutaneous administration. Large
doses of TFM create a picture similar to that of shock with concurrent
collapse of the vascular system. The toxic effect is further manifested by
changes in hepatocyte nuclei and depletion of testes. Smaller doses cause
dystrophic changes in the liver and kidneys. TFM produces a marked irritating
effect on the skin and mucosae. Recommendations have been made concerning
nutritional composition of the workers exposed to thallium as a means of
prophylaxis. No tables or figures; References 3: all Western.

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USSR

UDC 616.5-001-057:666.1.036.23

SUL'ZHENKO, A. I., Medical Institute, Smolensk

A METHOD FOR DETERMINING SKIN INJURY CAUSED BY GLASS FIBER AND GLASS PLASTICS
DUST

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA [Labor Hygiene and
Occupational Diseases] in Russian No 8, Aug 76 signed to press 3 Dec 75
p 55

[Abstract] An epicutaneous test with 0.1% solution of adrenaline hydro-
chloride has been proposed for determination of the injurious action of
fiberglass and glass plastic dust on the skin of workers in light of
current technological problems and individual protection deficiencies.
The method is objective and simple. It is suitable for routine derma-
tological examinations. Table 1; References 4: 3 Russian, 1 Western.

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USSR

UDC 613.6:061.3(474.2)"1975"

LOOGNA, N. A., and SHAMARDIN, B. M. Tallin

REPUBLICAN SCIENTIFIC-APPLIED CONFERENCE ON THE PROBLEMS OF INDUSTRIAL
HYGIENE AND OCCUPATIONAL PATHOLOGY (TALLIN, DECEMBER, 1975)

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA [Labor Hygiene and
Occupational Diseases] in Russian No 8, Aug 76 pp 58-59

[Abstract] Achievements and the future of studies in the area of industrial hygiene were discussed by I. I. AKKERBERG who noted the need for continuous study of working conditions due to the ever changing technological processes. The problems of improvements in measuring instrumentation were covered by A. K. AUNAP and V. KH. TIKHANE. KH. A. KAKHN discussed developments in clinical toxicology in Estonian SSR, while N. A. LOOGNA concentrated on the investigation of the occupational factors of low intensity but combined injury caused by a number of factors. A number of papers covered the diseases connected with the mechanization of agriculture, mostly concerned with noise injuries. The problem of occupational oncology was covered by two papers: V. A. Kyung discussed industrial dust as a cause of lung cancer, and B. A. BOGOVSKIY reported on current data on the etiology and prophylaxis of occupational tumors. No tables, figures or references.
1/1

USSR

UDC 618.1 + 618.17]-057:678

DORODNOVA, N. S., Medical Institute, Saratov

INCIDENCE OF GYNECOLOGICAL DISEASES AND SPECIFIC FUNCTIONS OF THE FEMALE
ORGANISM UNDER CONDITIONS OF CHEMICAL PRODUCTION OF "NITRON"

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA [Labor Hygiene and
Occupational Diseases] in Russian No 8, Aug 76 signed to press 4 Sep 75
pp 45-46

[Abstract] No special effect was noted on the performance or functions of the workers at the "Nitron" production plant during the test period. Gynecological diseases according to the screening data did not exceed the level of the control group and did not depend on the type of job. No effects were noted on the reproductive function. No tables or figures, References 3: all Russian.

1/1

VORONKOV, M. G., corresponding member of the Academy of Sciences USSR, VLASOVA, N. N., PLATONOVA, A. T., KLETSKO, F. P., TSYKHANSKAYA, I. I., KUZNETSOV, I. G., SHEVCHENKO, S. G., SADAKH, V. V., and SUSLOVA, S. K., Irkutsk Institute of Organic Chemistry, Siberian Branch of the Academy of Sciences USSR

TOXICITY OF SILICONORGANIC ALCOHOLS, MERCAPTANS AND SOME OF THEIR DERIVATIVES

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 229, No 4, Aug 76 signed to press 3 Mar 76 pp 1011-1013

[Abstract] Toxicity of silicon organic alcohols and mercaptans with the formula Si-C-XH was studied. All (trialkylsilyl)-alkanols and ethers of (trialkoxysilyl)alkanols as well as trialkylsilylalkanethiols vinyl-(trialkylsilylalkyl)-sulfides, ethyl-(triethylsilylmethyl)-sulfone bis-(triethylsilylethyl)-thiosulfonate and the potassium salt of triethylsilylalkanesulfonic acids are rather weakly toxic, their LD₅₀ being in the range of 1-3 g/kg. Substitution of an alkyl group connected to silicon by a methoxyl group increases their toxicity considerably. The effect on animals is manifested in their respiratory system. Tables 2; References 12: 9 Russian, 3 Western.
1/1

USSR

UDC 661.185.1:614.844.5

KAZAKOV, M. V., SHAROVARNIKOV, A. F., GORKUNENKO, V. M., KARPOV, V. I.,
ODINETS, M. V., and LYAGLEVA, L. K.

FIRE-EXTINGUISHING FOAM-SURFACTANTS

Moscow KHIMICHESKAYA PROMYSHLENNOST' in Russian No 8, Aug 76 pp 613-616

[Abstract] Data are given on the fire-extinguishing action of foams based on various surfactants. It is shown that the effectiveness of these foams is a complicated function of a number of their physical and chemical parameters. The coefficient of foaming capacity is recommended as a measure of effectiveness:

$$F = A_u K_m / 100$$

where A_u is the coefficient of utilization of air, and K_m is the maximum foam multiplicity factor. The coefficient of utilization of air is given by

$$A_u = V_f / V_s$$

1/2

USSR

KAZAKOV, M. V., SHAROVARNIKOV, A. F., GORKUNENKO, V. M., KARPOV, V. I.,
ODINETS, M. V., and LYAGLEVA, L. K., KHIMICHESKAYA PROMYSHLENNOST' No 8,
Aug 76 pp 613-616

where V_f is the volume of foam produced per minute, and V_a is the amount of air used to induce foaming per minute. A table is given showing the values of F , A_u and K_m for PO-3A, PO-1, PO-1D and PO-10 surfactant-foams. It has been found that the best materials for storage vessels are stainless steel and polyethylene. Research is being done to find additives that will retard corrosion of storage vessels. The best surfactant-foams for long-term storage are sulfonates PO-1 and PO-1D. PO-3A sulfate is poorest with respect to withstanding protracted storage. The foaming agents should be stored at temperatures between 5 and 20°C. Figures 4; Table 1; References 9: 7 Russian, 2 Western.

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FETISOV, O. I., KRASNOV, YE. P., ZUBOV, L. N., and CHEGOLYA, A. S.

A METHOD OF EVALUATING THE ABILITY OF FLAMEPROOF TEXTILES TO RETAIN THEIR SHAPE

Moscow KHIMICHESKIYE VOLOKNA in Russian No 4, 1976 signed to press 18 Jul 75 pp 33-34

[Abstract] A method is described for evaluating the change in geometric dimensions of flameproof textiles as a function of the duration of exposure to an open flame. A standard-size fabric specimen is clamped at one end, while the other end passes through a dial indicator and is loaded by a weight. The source of open flame is placed underneath the sample. A table is given showing test results for Nitron, Caprolan, Dacron, Phenylone, PVC, Nomex and modified Phenylone. It was found that chemical heat treatment of Phenylone with halide compounds gives a material that is completely incombustible and has excellent shape retention. PVC fabric performed worst: although it doesn't burn, it is rapidly destroyed by melting. Figure 1; Table 1; References 7: 2 Russian, 5 Western.

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BEYLINA, V. I., KOLOSOVA, T. O., NOSAYEV, G. A., GAL'PERIN, V. M., ANTONOVA, A. K., KRIVETS, L. I., GEFTER, YE. L., and ROGACHEVA, I. A.

PRODUCTION OF SELF-EXTINGUISHING FROTHING POLYSTYRENE

Moscow PLASTICHESKIYE MASSY in Russian No 7, Jul 76 p 69

[Abstract] An examination is made of the influence that compounds containing phosphorus and halides have on the styrene polymerization process, and the effectiveness of these compounds on reducing combustibility of foam polystyrene. Fire retardants added in amounts of 1-3% during polymerization make the plastic incombustible and do not reduce molecular weight or rate of polymerization. Bromophos-2, tris-2,3-dibromopropyl phosphate and pentabromophenylallyl ether are recommended as fire retardants for synthesis of frothing polystyrene with good physical and mechanical properties and satisfactory moldability. Table 1.

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ANAN'YEV, N. I., DEMIN, N. A., and APOLOSOVA, L. R., Department of General Hygiene, Tselinograd Medical Institute

EFFECTIVENESS OF PREPURIFICATION OF WASTE WATERS IN AN ACCUMULATING POND

Moscow GIGIYENA I SANITARIYA in Russian No 7, Jul 76 signed to press
9 Dec 75 pp 97-98

[Abstract] For eight years, the waste waters of Tselinograd have been sent to a settling pond after mechanical purification (screening, sand traps, radial settling tanks). Each day, the pond receives an average of 65,700 m³ of waste water, both domestic and industrial. Chemical analyses of the water in the pond indicate that the quantity of suspended matter in the settling tanks is reduced by 5.4-90.8%. In the settling pond, the waste water is almost completely liberated of suspended matter. The quantity of pollutants, based on the BOD₅ after mechanical purification is reduced by 25-57%, while the purification in the settling pond reaches its maximum in September, November and December -- 91.4-93.5%. After mechanical purification and passage through the settling pond, the coli titer is 0.1-1.0, the enterococcus titer is 0.1-10.0, and no helminth eggs are found at all. Table 1; References 4 (Russian).

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