"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002202020002-1

USSR

MANDEL'BAUM, YA. A., ABRAMOVA, G. L., MEL'NIKOV, N. N., GEDOSEYENKO, L. G., GOLUBEVA, Z. Z., and ANDREYEVA, YE. I.

"Amides of O-Alkyl-S-alkyldithiophosphoric Acid -- Novel Organophosphoric Pesticides with Fungicidal and Insecticidal Properties"

V sb. Khim. sredstva zashchity rast. (Chemical Plant Protective Agents -- collection of works), No 2, Moscow, 1972, pp 205-209 (from Zh-Khimiya, No 19, Oct 73, Abstract No 19N525)

Translation: Studying the effect of the thiol radical on pesticidal properties of various compounds, a series of amides with the general formual (RO)(R'S)P(S)NHR" (I) has been synthesized (R=Me, Et, Pro; R'=Pro, iso-Pro, But; R"=Me, Et, Pro, iso-Pro, iso-But). Toxicological evaluation showed I to exhibit fungicidal properties. Contact insecticidal activity of I is much weaker than the contact insecticidal activity of known preparations.

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USSR UDC 547.451

GRAPOV, A. F., and MEL'NIKOV, N. N., All-Union Scientific Studies Institute of the Chemical Compounds for the Protection of Plants

"Organophosphorus Fungicides"

Moscow, Uspekhi Khimii, No 9, Vol 42, 1973, pp 1681-1698

Abstract: The current literature on particular organophosphorus compounds used as fungicides is reviewed together with such information as synthesis, doses, types of organisms against which each is effective, etc. Classes of compounds discussed include derivatives of phosphorus and phosphonous acids, phosphine, phosphone salts, the acids of tetracoordinated phosphorus, its salts and its esters, and the amides of the various phosphorus acids. The latter two sections were considered in much greater detail than the former sections. The fungicidal activity of P(III) is apparently due to its being a reducing agent. The phosphone salts are significantly more effective than phosphine.

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USSR

VORONTSOVA, N. A., MEL'NIKOV, N. N., VLASOV, O. N., et al.

"Kinetics of the Condensation Reaction of Chloral with Dimethyl Phosphite"

V sb Khim. sredstva zashchity rast. (Chemical Plant Protective Agents), Moscow Vyp 2, 1972, pp 106-109 (from RZh-Khimiya, No 21, Nov 73, Abstract No 21N534)

Translation: The kinetics of the condensation reaction of $(MeO)_2PHO$ (I) with chloral in absence of a solvent at 11° has been studied using different ratios of the starting components. It has been shown that the reaction is a third order reaction, partial order with respect to I is second order.

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USSR

UDC 502.7 + 632.95

MEL'NIKOV, N. N.

Moscow, Zhurnal Vsesoyuznogo Khimicheskogo Obshchestva imeni D. I. Mendeleyev, Vol 18, No 5, 1973, pp 570-576

Abstract: A review with 72 references discussing the effect of pesticides on the surrounding medium, including such exosystems as soil and water reservoirs. It has been shown that with proper selection of the chemical preparations and adherence to the necessary regulations, the use of pesticides should not endanger the natural habitat. General requirements were reported for the preparations which would decrease the negative effect of pesticides on a variety of useful living organisms.

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USSR UDC 632.9

MEL'NIKOV, N. N.

"Current Directions in the Development of the Production and Application of Pesticides"

Moscow, Zhurnal Vsesoyuznogo Khimicheskogo Obshchestva imeni D. I. Mendeleyev, Vol 18, No 5, 1973, pp 482-494

Abstract: A review with 211 references. Based on literature analysis the development of the production and application of chemical plant protective agents has been review with evaluation of promising directions in the ongoing research on the synthesis of new pesticides. Basic chemical trends in synthesizing new pesticides have been evaluated and the more interesting novel pesticides, fungicides, and acaricides have been characterized. Statistical data on the production of pesticides in the USA and other countries with appropriate projections for the future developments have been reported.

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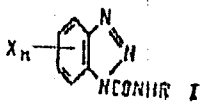
USSR UDC 632.95

MEL'NIKOV, N. N., NURIDZHANYAN, K. A., KUZNETSOVA, G. V., and NESTEROVA, L M.

"Synthesis of 1-Acyl(alkyl-, aryl halide)carbaminoylbenzotriazole"

USSR Author's Certificate No 327204, filed 23 Feb 70, published 28 Mar 72 (from Referativnyy Zhurnal -- Khimiya, Svodnyy Tom, No 1(II), 1973, Abstract No 1N514P by T. A. Belyayeva)

Translation: A compound with a general formula (I) (R = acyl, alkyl, aryl halide, aryloxyacyl; X= halide, alkyl, NO_2, n = 0-4) is synthesized in the reaction of RNCO (II) with substituted benzotriazole (III) in C_6H_6 at low temperature. Example. To 4.53 g II (R = 2-ClC_6H_4) in ml C_6H_6 3.52 g III is added. The obtained suspensoid is agitated for 3 hrs on mechanical vibrator and kept at ~20°C for ~16 hrs. To the reaction mixture



isooctane is added and 7.85 g I (R = 2-ClC_6H_4, n = 0) is removed by filtration, m.p. 160-161°C (benzene). To 1.84 g II suspensoid (R = 4-ClC_6H_4CO) in C_6H_6

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USSR

MEL'NIKOV, N. N., et al., USSR Author's Certificate No 327204, filed 23 Feb 70, published 28 Mar 72

1.2 g III is added, the mixture is boiled for 10-15 min., kept for ~16 hrs, and the residue is separated. The reaction yields 2.69 g I (R = 4-ClC_6H_4CO, n = 0), m.p. 173-175°C (decomposes; PhMe). Another I are prepared in a similar way (R, yield in %, m.p. in °C are given in that order), n=0: Bu, 99, 39-40; Me, 94, 116-117 (benzene); PhCO, 88.6, 139-141 (decomposes); 4-ClC_6H_4, 96.8, 194-195 (PhMe); 3-ClC_6H_4, 90.2, 180-181. The structure of I was verified by infrared and NMR spectra.

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USSR UDC 632.95

MANDEL'BAUM, Ya. A., LOMAKINA, V. I., KORNOUKHOVA, M. V., and MEL'NIKOV, N. N.

"Synthesis of Bis[β-alkyl(aryl)sulfonylhydrazides] of Thiophosphoric Acids"

USSR Author's Certificate No 332093, filed 26 Feb 70, published 17 Apr 72 (from Referativnyy Zhurnal -- Khimiya, Svodnyy Tom (I, L-S), No 1(II), 1973, Abstract No 1N452P by T. A. Belyayeva)

Translation: A compound with a general formula $RP(S)(NHNHSO_2R')_2$ (I) (R = alkoxyl, aroxyl, or amino group; R' = alkyl or aryl) is synthesized by the reaction of $RP(S)(NHNH_2)_2$ (II) with $R'SO_2Cl$ (III) in the presence of HCl acceptor in solvent (C_6H_6, alcohol). Example. To 0.25 mole II (R = EtO) in 150 ml C_6H_6 0.5 mole Et_3N is added at 40°C followed by a slow addition of 0.25 mole III (R' = Et). The reaction mixture is stirred for 2 hr at 60°, and for 1 hr at 80°C, filtered at 70°C, and concentrated by evaporation. The yield of I (R = EtO, R' = Et), m.p. 158-160°C, is 50%. Compound I prepared in the same manner were characterized by (R, R', m.p. in °C, yield %, in that order): EtO, Ph, 102-105 (alc.), 30; PhO, Me, 173-175 (ether), 45; PhO, Ph, 168-170, 56. Compound I possesses acaricidal and fungicidal properties.

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USSR UDC 547.26'118

GRAPOV, A. F., KOZLOVA, T. F., MEL'NIKOV, N. N.

"Alkoxy- and Alkylthiomethylthiophosphonic Acid Dichlorides"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 3, Mar 73, p 676

Abstract: The best method for the synthesis of thiophosphonic acid dichlorides is by heating the corresponding phosphonic acid dichloride with phosphorus pentasulfide to 120-160°. Following acid dichlorides have been synthesized, parent acid, b.p., n_D^{25}, and d_4^{25} being reported: methoxymethylthiophosphonic, 34-35°/0.12 mm, 1.5548, 1.4262; ethoxymethylthiophosphonic, 34-35°/0.12 mm, 1.5358, 1.3512; ethylthiomethylthiophosphonic, 66-67.5°/0.12 mm, 1.5852, 1.3797; isopropylthiomethylthiophosphonic, 82-82.5°/0.17 mm, 1.5702, 1.3392; and butylthiomethylthiophosphonic acid, 85-86°/0.17 mm, 1.5622, 1.2975.

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USSR

UDC 547.26'11

RYMAREVA, T. G., MEL'NIKOV, N. N., and KHASKIN, B. A., All Union Scientific Research Institute of Chemical Plant Protective Agents

"Reaction of Etheramides of Thiophosphoric Acid With Sodium Methoxide"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 3, Mar 73, pp 676-677

Abstract: Heating equimolar quantities of an etheramide of thiophosphoric acid and sodium methoxide in methanol at 80° for 8-10 hrs yields initially a trialkylthiophosphate and an aliphatic amine. Then the trialkylthiophosphate reacts further with sodium methoxide yielding a sodium salt of 0,0-dialkylthiophosphoric acid. It also alkylates stepwise the amine obtained all the way to trialkylammonium salt of 0,0-dialkylthiophosphoric acid.

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USSR UDC 632.95

BAKANOVA, Z. M., MANDEL'BAUM, YA. A., and MEL'NIKOV, N. N.

"Methylnitrophos"

V sb. Khim. sredstva zashchity rast. (Chemical Plant Protectants -- collection of works), vyp 1, Moscow, 1970, pp 14-17 (from RZh-Khimiya, No 13, 10 Jul 72, Abstract No 13N454 by T. A. Belyayeva)

Translation: The article shows physical and chemical properties of $(MeO)_2(4\text{-}NO_2\text{-}3\text{-}MeC_6H_3O)PS$ and $(MeO)_2(6\text{-}NO_2\text{-}3\text{-}MeC_6H_3O)PS$ and a method for the synthesis and analysis of methylnitrophos (I). I is used in the form of a 25% emulsion concentrate.

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USSR UDC 632.95

MEL'NIKOV, N. N., MEL'NIKOVA, I. A., STONOV, L. D., KAZAKOVA, V. G., and GRABOVSKAYA, A. E.

"A Herbicide"

USSR Author's Certificate No 300143, filed 17 Sep 69, published 5 Oct 71 (from RZh-Khimiya, No 11, Jun 72, Abstract No 11N477)

Translation: 2-MeO-4-RNH-6-R'(HO)N-symm-triazines (I) (R = C_1-C_5-alkyl, R' = C_2-C_4-alkyl) are utilized as selective herbicides. Compounds I in a herbicidal dose of 1 kg/hektare in the pregermination stage are harmless to cotton. When used for treatment in the vegetative stage, compounds I with their high specificity for millet, were found to be very toxic for pigweed, corn mayweed, amaranth, wild oats and other weeds.

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USSR UDC 632.95

ANDREYEVA, YE. I., MEL'NIKOV, N. N., PRONCHENKO, T. S., SKALGUBOVA, A. V., MATVEYEVA, G. N., OVSISHCHER, M. R., BEZUGLYY, S. F., and UGRENOV, M. T.

"Phenothiuram Seed Disinfectant"

V sb. Khim. Sredstva zashchity rast. (Chemical Agents for Plant Protection -- collection of works), vyp 1, Moscow, 1970, pp 135-145 (RZh-Khimiya, No 11, Jun 72, Abstract No 11N429)

Translation: The combination disinfectant phenothiuram (40% tetramethylthiuram disulfide, 10% copper trichlorophenoxide, and 20% γ-hexachlorocyclohexane; heptachlor or some other organochlorine insecticide may be substituted for the last component) has been tested and is recommended for treating cotton seeds (10-12 kg/ton) and the seeds of legume grain crops (3-4 kg/ton). Phenothiuram may also be used to treat seed corn, tree crop seeds, and the planting material for flowers, shrubs and trees. Phenothiuram is moderately toxic and is recommended as a substitute for organomercury disinfectants.

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USSR UDC 632.95

MEL'NIKOV, N. N., ANDREYEVA, YE. I., PRONCHENKO, T. S., SKALOZUBOVA, A. V., SHKURATOVA, G. N., KURGANOVA, L. B., YURKOVA, A. G., OBUKHOVA, V. I., and NOVIKOVA, R. G.

"Concerning Liquid Organomercury Seed Disinfectants"

V sb. Khim. sredstva zashchity rast. (Chemical Agents for Plant Protection -- collection of works), vyp 1, Moscow, 1970, pp 150-155 (From RZh-Khimiya, No 11, Jun 72, Abstract No 11N427)

Translation: From the results of hothouse and small-plot field tests of non-Soviet and experimental Soviet samples of liquid organomercury fungicides, as well as with consideration to non-Soviet research and practical use in such fungicides, the authors conclude that liquid preparations deserve attention as promising forms for use as seed disinfectants in Soviet agriculture.

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USSR

UDC 632.95

YUKHTIN, N. N., ANDREYEVA, YE. I., [redacted] SEALOZUBOVA, A. V., PRONCHENKO, T. S., SHKURATOVA, G. N., YURKOVA, A. G., KURGANOV, L. B., NOVIKOVA, R. G., and OBUKHOVA, V. I.

"Phenylmercury and Hexylmercury"

V sb. Khim. sredstva zashchity rast. (Chemical Agents for Plant Protection -- collection of works), vup 1, Moscow 1970, pp 145-150 (from RZh-Khimiya, No 11, Jun 72, Abstract No 11N426)

Translation: Seed disinfectant dusts -- hexylmercury (1% EtHgCl, 18-22% hexachlorobenzene, and up to 20% γ -hexachlorocyclohexane) and phenylmercury (1% EtHgCl and 18-22% hexachlorobenzene) -- are officially authorized in the Soviet Union for use against the same plant diseases as those controlled by granosan. About half the EtHgCl expended when granosan is used is expended when phenylmercury and hexylmercury are used. Phenylmercury can be used against fusarium wilt and helminthosporiosis. The new disinfectants show promise as agents for controlling dwarf wheat infections and wheat kernel smut. The most promising signal dyes for the disinfected grain are Rhodamine C, methylene blue, acid blue-black and direct red 2C.

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USSR UDC 632.95

MEL'NIKOV, N. N., SOKOLOVA, YE. M., TRUNOV, P. P., VOLOKOVICH, S. D., DYISHAKOVA, G. M., GOLYSHIN, N. M., ABELENTSEV, V. I., UKRAINETS, N. S., FEDOSSYENKO, L. G., ZAIKIN, B. A., DVUKHSHERSTOV, M. G., VISHEVETSKAYA, A. M., ORLOV, S. I., ZAVIZION, A. P., and TALASH, A. I.

"Polycarbazin"

V sb. Khim. sredstva zashchity rast. (Chemical Plant Protectants -- collection of works), vyp 1, Moscow, 1970, pp 95-104 (from RZh-Khimiya, No 13, 10 Jul 72, Abstract No 13N503 by T. A. Belyayeva)

Translation: The effectiveness of polycarbazin (I) on apple scab and grapevine mildew equals that of zineb (II) and polyram-combi, while on cherry-fruit gray rot it equals Bordeaux liquid (III) (1 percent), but is ahead of II. I equals II and III for Clasterosporium infection of the cherry plum and tomato macrosporiosis. The decisive factor which determine the length of action of I is precipitation, which washes theprepaaration off plants.

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USSR UDC 632.95

LUKANINA, V. S., BEZUGLYY, S. F., MEL'NIKOV, N. N., IVANOVA, S. N., GORCHKOVA, V. V., KOSTYUKOVA, M. I., and KURBATOVA, T. I.

"Emulsifiable Concentrate of 5,4'-Dichlorosalicylanilide -- An Effective Molluscicide"

V sb. Khim. sredstva zashchity rast. (Chemical Plant Protectants -- collection of works), vyp 1, Moscow, 1970, pp 61-65 (from RZh-Khimiya, No 13, 10 Jul 72, Abstract No 13N498 by I. Pil'menshteyn)

Translation: The use of 5,4'-dichlorosalicylanilide (I) in the form of a 10-percent emulsion concentrate (EC) increases its molluscicidal activity 8-9 fold over tha of an ammonia solution. I is 800-900 times more effective than $CuCO_4$. At a $1:9.10^6$ dilution I provides 100% destruction of molluscs. In the applied concentration I is harmless for warm-blooded animals and grass cover. There is no change in the physicochemical properties and molluscicidal activity of the EC of I when it is stored in an airtight container for two years. The 10% EC of I is recommended for application in agriculture in doses of 1-5 kg/ha.

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USSR UDC 632.95

MEL'NIKOV, N. N., SHVETSOVA-SHILOVSKAYA, K. D., SAPOZHKOV, YU. N., and CHERNYAKOV, I. YE.

"Dicresyl Compound"

V sb. Khim sredstva zashchity rast. (Chemical Agents for Plant Protection -- collection of works), vyp 1, Moscow, 1970, pp 56-60 (from RZh-Khimiya, No 11, Jun 72, Abstract No 11N399)

Translation: A mixture of meta- and para-cresyl esters of N-methylcarbamic acid, called dicresyl, is recommended for use against ticks on animals and birds. The mixture in a ratio of 1:1 is no less effective than pure meta-cresyl ester. Dicresyl can be synthesized by reacting a mixture of cresols with phosgene in the presence of acid-binding agents with subsequent methylamine treatment of the resultant chloroformate esters by amidizing absolute cresyl carbonate, and by ereacting a mixture of cresols with MeNCO.
P. V. Popov

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MEL'NIKOV, N. N., SHVETSOVA-SHILOVSKAYA, K. D., SAPOZHKOV, YU. N., PUSHINA, M. YA., and TITOVA, YE. B.

"Trichlorometaphos-3 Compound"

V sb. Khim sredstva zashchity rast. (Chemical Agents for Plant Protection -- collection of works), vyp 1, Moscow, 1970, pp 28-32 (from Ref-Khimiya, No 11, Jun 72, Abstract No 11N396)

Translation: Trichlorometaphos-3 of formula(I) $(EtO)P(S)OC_6H_2Cl_3$-2,4,5 (I) with a boiling point of $127^0/0.15$, d_4^{20} 1.4345, $n^{20}D$ 1.5520 is synthesized by reacting $(MeO)(EtO)P(S)Cl$ with 2,4,5-$Cl_3C_6H_2ONa$. Compound I is used against the larvae of botflies, mites and flies. In order to purify the 80% commercial product, impurities are continuously steam-distilled utilizing a glass packing column. The purified product is dried at 90-100°C and a pressure of 20-30 mm for 1 hour. A diagram is presented of the column for purifying I.

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USSR UDC 547.26'118

KHASKIN, B. A., RYMAREVA, T. G., MEL'NIKOV, N. N., All-Union Scientific Research Institute of Chemical Agents for Plant Protection

"Concerning a Secondary Reaction in the Synthesis of O-Alkyl O-Arylthiophosphoric Acid Amides"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 7, Jul 72, pp 1653-1654

Abstract: When O-alkyl O-arylthiophosphoric acid amides were synthesized by reacting gaseous methylamine or dimethylamine with O-alkyl O-arylthiophosphoryl chlorides in absolute benzene at 40-60°C, products of a secondary reaction were observed -- salts of the corresponding amine and arylamidothiophosphoric acid. The synthesis of these byproducts is explained as follows. When the primary or secondary amine attacks the phosphorus atom, the O-alkyl O-arylthiophosphoryl halide is dealkylated with formation of the alkyl halide and O-aryl amidothiophosphoric acid. This phosphoric acid then forms the corresponding ammonium salt in the presence of the amine. The proposed reaction is confirmed by data in the literature on reaction of O,O-dialkylphosphoric acid halides with tertiary amines and aniline.

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UDC 615.777/779

USSR

RYMAREVA, T. G., KHASKIN, B. A., MEL'NIKOV, N. N.

"Reaction of Amide Esters of Thiophosphoric Acid with Primary and Secondary Amines"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 7, Jul 72, pp 1473-1477

Abstract: The alkylating capacity of amide esters of thiophosphoric acid was studied. It was found that when equimolecular quantities of primary and secondary aliphatic amines reacted with amide esters of thiophosphoric acid, mono-, bis- and quaternary ammonium salts were produced, depending on the reaction conditions. It was also found that when primary or secondary amines, taken in excess, were alkylated with amide esters of triphosphoric acid, salts of the corresponding amine and amidothiophosphoric acid were formed.

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USSR UDC 632.95

GOLYSHIN, N. M., ABELENTSEV, V. I., DVURHSHERSTOV, M. G., [redacted]
VOLODKOVICH, S. D., TRUNOV, P. P., DYMSHAKOVA, G. M., NOVIKOVA, V. A.

"Fungicide Mix"

USSR Author's Certificate No 250600, filed 28 Mar 68, published 16 Jul 71 (from RZh-Khimiya, No 6 (II), Jun 72, Abstract No 6N624)

Translation: Ethylenethiuramdisulfide (13-40%) is added to a fungicide mix containing ethylenebisdithiocarbamates of Zn (36-55%) and Mn (20-35%) for simultaneous control of several plant diseases. The preparation can be used for preplant treatment of the seed of bean and vegetable crops with consumption norms of 6-10 grams/kg of feed.

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002202020002-1

USSR UDC 632.95

BASKAKOV, YU. A., BAKUMENKO, L. A., [redacted], EVIRSKAYA, P. I., STONOV, L. D., SIMONOV, V. D., SHVINDERMAN, G. S., SHCHERBATYKH, YU. I.

"Meturin -- a New Herbicide for Cotton and Potatoes"

V sb. Khim. sredstva zashchity rast. (Chemical Agents for Plant Protection -- collection of works), vyp. 1, Moscow, 1970, pp 179-187 (from RZh-Khimiya, No 11, Jun 72, Abstract No 11N446)

Translation: A new herbicide -- meturin (I) (N-phenyl-N-hydroxy-N'-methylurea) -- was synthesized. The compound can be produced with a high yield by reacting phenylhydroxylamine with MeNCO. Treatment of vegetating plants with I is not highly effective. The best results are obtained when the herbicide is introduced into the soil before planting. As a rule, dicotyledons are more effectively suppressed by I than monocotyledons. Highly sensitive to I (70-100% inhibition of growth from a dose of 0.5 kg/hectare) are corn cayweed, sheep sorrel, wild beets, pigweed, wild rice, buckwheat, soybeans, tomatoes, cabbage, cucumbers, radishes, clover and alfalfa. Sensitive to I (70-100% death from a dose of 1.5 kg/hectare) are field pennycress, field wintercress, barley grass, beans, vetch, carrots, beets and flax. Moderately sensitive (complete control with a dose of 3 kg/hectare) are oats, wheat, corn

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BASKAKOV, YU. A., et al., V sb. Khim. sredstva zashchity rast., vyp 1, Moscow, 1970, pp 179-187

beans, seed onions, and sunflowers. Rough smakweed is among the weeds resistant to I, while potatoes and cotton are resistant crops. The compound retains high activity throughout the entire vegetative period in the upper layer of soil (0-5 cm). The activity of the herbicide begins to decline within 2 months after introduction in the lower and middle layers of soil. In doses of 3-4.5 kg/hectare, I destroyed 70-90% of the annual weeds in cotton fields, but in some instances caused temporary chlorosis in a dose of 4.5 kg/hectare. In potato fields, the compound in doses from 2 to 3 kg/hectare destroyed annual weeds throughout the entire season, which meant that potatoes could be grown without hilling. The compound has low toxicity for human beings. It is authorized in the Soviet Union for experimental production use on potatoes.

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UDC 632.95

USSR

BLINOVA, V. G., IVANOVA, S. N., KLIMKINA, L. G., SHVETSOV-SHILOVSKIY, N. I., and MEL'NIKOV, N. N.

"Method of Preparing 2-Oxo-3-chrysanthemoylhydroxymethylbenzoxazoline or 2-Thio-3-chrysanthemoylhydroxymethylbenzoxazoline"

USSR Authors' Certificate No 259891, filed 2 Aug 68, published 12 May 70 (from RZh-Khimiya, No 1, 10 Jan 71, Abstract No 1N597P)

Translation: Compounds of the general formula $\overline{C(=Y)OCH_3(X)NCH_2OCO\overline{CHCH_2}CHCH}$ $=CMe_2$ [I; $C_6H_3(X)$ = substituted o-phenylene; X = H, halogen; Y = O or S] are obtained by the reaction of benzoxazolinones or benzoxazolinethiones with acid chloride of chrysanthemumic acid (II) in the presence of an HCl acceptor, e.g. C_5H_5N, at temperature 0-9° in an organic solvent or without it. Example. To a suspension of 0.01 mole 3-hydroxymethylbenzoxazolinethione in 10 ml anhydrous PhMe are added 0.04 mole C_5H_5N with stirring and then, dropwise, at temperature 5-9° a solution of 0.01 mole II in 10 ml PhMe. The reaction mixture is stirred for 5 hr at ~20°, after which $C_5H_5N \cdot HCl$ is filtered off. The solution is extracted consecutively with a 5% HCl acid solution, an $NaHCO_3$ solution, an NaCl solution, and dried over Na_2SO_4. The solvent is distilled off in vacuum, and the residue is

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BLINOVA, V. G., et al., USSR Authors' Certificate No 259891, filed 2 Aug 68, published 12 May 70 (from RZh-Khimiya, No 1, 10 Jan 71, Abstract No 1N597P)

crystallized from heptane, to yield 2.9 g I (X==H, Y==S), melting point 91-2°. The following I's are synthesized (indicated here are X, Y, % yields, melting point, °C): H, O, 90, 85-6 (heptane); 6-Cl, O, 94, oil; 6-Br, O, 91, 78-9 (heptane); 6-Br, 95, S, oil. Compounds possess high fungicidal activity.

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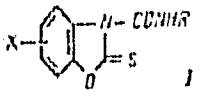
USSR

POZNANSKAYA, N. L., GOLOSKOVA, A. V., IVANOVA, S. N., SHVETSOV-SHILOVSKIY, N. I., and MEL'NIKOV, N. N.

"Method of Producing N-Carbamoylbenzoxazolin-2-thiones"

USSR Author's Certificate No 283987, filed 12/04/69, published 5/04/71. (Translated from Referativnyy Zhurnal Khimiya, No 4, Moscow, 1972, Abstract No 5N668P by L. V. Razbadovskaya)

Translation: Compounds with the general formula (I) (X=lower alkyl, H, halide, R=lower alkyl, alkenyl, aryl, substituted aryl) are produced by the reaction of the corresponding benzoxazolinthione with RNCO in the presence of a base in an organic solvent. Four drops of Et_3N and 10.4 g of MeNCO are added to a suspension of 18.6g 5-Cl-benzoxazolinthione in 150 ml dicholoroethane, stirred for 20 hours at 20°, the solvent is distilled, producing 12 g I (X=5-Cl, R=Me) (Ia), yield 50%, mp 244-6° (Isooctane). I can be similarly produced (given are X, R,



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POZNANSKAYA, N. L., et al., USSR Author's Certificate No 283987, filed 12/04/69, published 5/04/71. (Translated from Referativnyy Zhurnal Khimiya, No 5, Moscow, 1972, Abstract No 5N668P by L. V. Razbadovskaya)

yield in %, mp in °C): H, Me (IB), 50, 97-8; 6-Cl, Me, 78.8, 216-8; 6-Cl, m-Cl C_6H_4, 84, 168-9; 5Cl, Ph (Ic), 78, 245-6; H, allyl, 60,5, 82-3; 5-Me, Me, 30, 135-6; 5 Me, m-ClC_6H_4, 74, 164. Under similar conditions but with boiling of the reaction mixture, the product is I (given are X, R, yield in %, mp in °C): H, m-ClC_6H_4, 68, 139-40; 5-Cl, m-ClC_6H_4, 70, 260-2. I has biological activity. Ia and Ic in concentrations of 0.005% are superior to phygone in their effects on Botrytis cinerea, Fusarium Moniliforme, Venturia inaequalis, Aspergillus niger. Ia and Ib are effective seed disinfectants.

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USSR UDC 632.95

MANDEL'BAUM, Ya. A., NIKISHOVA, G. Ye., and MEL'NIKOV, N. N.

"Method of Production of Chloromethylimides"

USSR Author's Certificate No 311904, filed 28/07/69, published 11/10/71, (Translated from Referativnyy Zhurnal, Khimiya, No 9, 1972, Abstract No 9 N529 P by T. A. Belyayeva)

Translation: Chloromethylimides are intermediate products in the synthesis of phthalophos and phozalone, produced by the reaction of the imide of the corresponding acid with formaldehyde and HCl (acid) at a concentration of at least 30%, at 55-60°C. 0.11 mol of a 37% solution of formaldehyde and a 7-fold excess of a 36% HCl (acid) solution are added to 0.1 mol phthalimide, heated to 55-60°, HCl (gas) is bubbled through for 8-10 hours, the mixture is cooled and filtered. The precipitate is washed in water and dried, producing chloromethylphthalimide, yield 95%, m.p. 130-2°. The filtrate is returned to the process. Chloromethyl-6-chlorobenzoxazolone is produced similarly, m.p. 120-3°, as well as chloromethylbromobenzoxazolone, m.p. 137°.

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MEL'NIKOV, N. N., PROKOF'YEVA, A. F., and VLADIMIROVA, I. L.

"Method of Production of 0,0-dialkyl Benzylphosphonates"

USSR Author's Certificate No 301336, filed 11/04/69, published 11/10/71 (Translated from Referativnyy Zhurnal, Khimiya, No 9, 1972, Abstract No 9 N568 P by L. V. Razvodovskaya)

Translation: Compounds with the general formula $(RX)R'C_6H_3CH_2P(Y)(OR'')_2$ (I) (R = Me, Et, CH_2COMe; R' = H, Cl, Me; R'' = Me, Et, iso-Pr; X and Y = O or S) are produced by the reacting $MP(Y)(OR'')_2$ (M = alkali metal) with $(RX)R'C_6H_3CH_2Cl$ at 70-90° in an organic solvent. Three point sixty-one g $HP(P)(OEt)_2$ is added to a suspension of 0.6 g Na in 30 ml absolute toluene at 25°, then heated at 60° until the Na dissolves and a solution of 5 g $2\text{-MeO-5-Cl}C_6H_3CH_2Cl$ in 20 ml absolute toluene is added. The mixture is heated at 80° for 1 hour, cooled, the precipitate is filtered, washed with ether, the filtrate is evaporated in a vacuum, producing I (RX = 2-MeO, R' = 5-Cl, Y = O, R'' = Et), yield 51.33%, b.p. 140-1°/0.25, $n^{20}D$ 1.5150, d_4^{20} 1.2176. Similarly produced are I (given are RX, R', R'', Y, yield in % b.p. in °C/mm, $n^{20}D$, d_4^{20}): 2-MeO, 5-Cl, Et, S, 46.4, 138-40/0.25, 1.5365, 1.2099; 2-EtO, 5-Cl, Et, S, 49, 136-8/0.22, 1.5300, 1.1812; 2-EtS, 5-Cl, iso-Pr, O, 63, 142-5/0.14, 1.5050,

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MEL'NIKOV, N. N., et al., USSR Author's Certificate No 301336, filed 11/04/69, published 11/10/71 (Translated from Referativnyy Zhurnal, Khimiya, No 9, 1972, Abstract No 9 N567 P by L. V. Razvodovskaya)

1.1373; 2-OCH_2COMe, 5-Me, iso-Pr, O, -, -, 1.4950, -. The products I have fungicidal activity.

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UDC 632.95

MEL'NIKOV, N. N., KRYLOVA, T. P., and VLADIMIROVA, I. L.

"Method of Preparation of Substituted Amidoesters of Thiophosphoric Acid"

USSR Author's Certificate No 300471, filed 20/02/70, published 23/06/71. (Translated from Referativnyy Zhurnal Khimiya, No 8, Moscow, 1972, Abstract No 8 N583 P.)

Translation: Compounds of the general formula (RO)P(S)X(NHCOCH=CHPh) (I) (X = OR', NR', NR'_2, R and R' = alkyl) are produced in the reaction of (RO)P(S)X(NH_2) (II) with PhCH=CHOOR" (III, R" = alkyl) in the presence of an alkaline catalyst. 1.2 gm Na is added to a solution of 10 gm of (II) (R = Et, X = NMe_2) in ethyl alcohol, and heated until the sodium is dissolved. 10.4 gm III (R" = Et) (IIIa) are then added at 20°. The mixture is heated for 6 hours on an aqueous bath, C_6H_6 is added, the resulting solution is filtered, the filtrate washed with water, dried and the solvent distilled off. The yield was 9.5 gm (I) (R = Et, X = NMe_2), mp 150-1° (ethanol). (I) was prepared analogously (R, X, yield, in %, mp in °C are listed): Et, EtO, 21, 68; Bu, BuO, --, 83. To 10 gm (II) (R = Et, X = NPr_2) EtONa (from 0.6 gm Na) is added, heated for 2 hours on a water bath and then 9 gm IIIa are added and heated 4 hours on a water bath. The

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MEL'NIKOV, N. N., USSR Author's Certificate No 300471, filed 20/02/70, published 23/06/71. (Translated from Referativnyy Zhurnal Khimiya, No 8, Moscow, 1972, Abstract No 8 N583 P.)

solution is then diluted with water, the C_6H_6 is extracted and the solvent is distilled off. The yield is 1 gm of (I) (R = Et, X = NPr_2), mp 186°. (I) was prepared analogously (R, X, yield in %, mp in °C are listed): Et, NHPr, — 90-1; Et, NHMe, 27, 86; Et, NEt_2, — 163-4. (I) can be used as a pesticide.

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USSR UDC 547.26'118

MANDEL'BAUM, Ya. A., ITSKOVA, A. L., and MEL'NIKOV, N. N.

"Synthesis of O-Aryl O'-Alkyl Phosphites"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 3, Mar 72, pp 502-503

Abstract: The authors investigate the possibility of synthesizing alkyl aryl phosphites in a single step from phosphorus trichloride, the corresponding alcohol and phenol. Methanol was used as the donor of the hydroxyl group.

$$PCl_3 + ROH + ArOH + CH_3OH \rightarrow (RO)(ArO)POH + 2HCl + CH_3Cl$$

Isolation of the O-aryl O'-alkyl phosphites is impeded by the symmetric dialkyl- and diaryl phosphites formed as by-products. Chemical and physical data are tabulated for eleven synthesized O-aryl O'-alkyl phosphites.

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Organophosphorous Compounds

USSR UDC 632.954

GRAPOV, A. F., LEBEDEVA, N. V., MEL'NIKOV, N. N., SERGEYEVA, T. A., STONOV, L. D., TITOVA, L. M., and VOLKOTRUB, E. N., All Union Scientific Research Institute of Chemical Means of Plant Protection

"A New Herbicide Called Isophos"

Moscow, Agrokhimiya, No 1, 1972, pp 96-103

Abstract: Herbicidal properties of isophos-1, $ClCH_2P(S)(NHC_4H_9\text{-sec.})(OC_6H_3Cl_2\text{-}2,4)$, and isophos-2, $ClCH_2P(S)(NHC_3H_7\text{-iso})(OCOH_3Cl_2\text{-}2,4)$, were tested on many plants, including cockspur grass (Echinochloa crus-galli), and rice grass (Echinochloa oryzicola), the weeds which commonly grow with rice. Application of 2-6 kg isophos-1 or isophos-2/ha killed 100% of the above weeds. The best time for application of the herbicides was before sowing of rice, or prior to its sprouting. A surface application produced the best results. Both types of isophos in 4-8 kg/ha doses were toxic to garden orache, amaranth, and white bent. Field pennycress, spring wild oat, and knotweed were of average sensitivity toward isophos.

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USSR

GRAPOV, A. F., et al., Agrokhimiya, No 1, 1972, pp 96-103

Among the cultivated plants, rice was most resistant toward this herbicide, followed by wheat, oats, and barley (most sensitive). Cotton, beans, radishes, and sunflowers are resistant to isophos, but sugar beets and flax are sensitive. Carrots were most resistant to isophos in doses of 1-4 kg/ha and tomatoes and cucumbers showed medium resistance. Isophos was 100% effective against rice grass in meadow-marshy, soddy-podzolic, and sierozem soils. It was only 83-97% effective in soils with high humus content. Effectiveness of isophos lasted for 30-100 days after application. Analysis of the soil horizons indicated that it remained mainly in the top 0-10 cm of soil. The structure of the aryl radical determines the phytotoxic properties of amides of thio- and dithiophosphonic acids. Presence of two Cl atoms in the phenyl group increases the herbicidal effects of these compounds.

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USSR UDC 547.26'118

MANDEL'BAUM, YA. A., SOYFER, R. S., BELOVA, L. A., MEL'NIKOV, N. N.

"Synthesis of Derivatives of Aryl-S-(N-alkylcarbamoylmethyl)di- and trithiophosphates"

Leningrad, Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 65-73

Abstract: A study was made of the possibility of synthesizing O-aryl-O-alkyl-S-(N-alkylcarbamoylmethy)dithiophosphates from O-aryl-O-alkylchlorothiophosphates and amides of thioglycolic acid (a) and from O-aryldichlorothiophosphates, amides of thioglycolic acid and sodium alcoholates in alcohol (b). One procedure resulted in greater than a 50% yield of the target compounds. A second procedure gives a very low yield as a result of prevalence of the side processes in the synthesis. A new series of O-aryl-S,S-di(N-alkylcarbamoylmethyl)trithiophosphates was synthesized from O-aryldichlorothiophosphates and Na-derivatives of thioglycolic acid. The reaction takes place with the formation of a series of side products. The compounds obtained have acaricidal and fungicidal activity. The formulas, some physical characteristics, yields and side compounds are presented for the various reactions in tabular form. The two synthesis methods used are represented as follows

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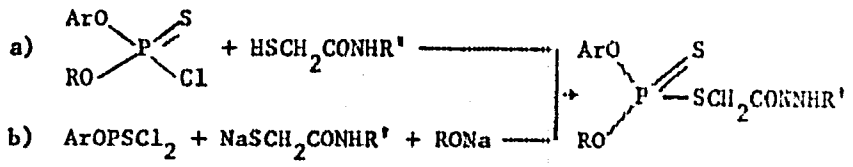
MANDEL"BAUM, YA. A., et al., Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 65-73



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USSR UDC 547.26'118

PROKOF'YEVA, A. F., MEL'NIKOV, N. N., VLADIMIROVA, I. L., and EYNISMAN, L. I., All-Union Scientific Research Institute of Chemical Plant Protection

"Organic Insectofungicides. Reaction of Substituted Benzyl Chlorides with Dialkyl and Trialkyl Phosphites"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 8, Aug 71, pp 1702-1706

Abstract: Since there has been insufficient study of the Michaelis-Becker reaction for the synthesis of phosphonates in the case of benzyl halides, the authors undertook to study the reaction of dialkylphosphorous and thiophosphorous acid salts with benzyl chlorides containing various substituents in the benzene ring. Salts of dimethyl-, diethyl-, diisopropylphosphorous acids and diethylthiophosphorous acid were used as the nucleophilic agent. The reaction, conducted in absolute toluene at 70-90° for 3-10 hours, gives O,O-dialkyl benzylphosphonates. The principal processes occurring in such polar solvents as methanol, methanol-water, methanol-toluene, dioxane-water are methanolysis or hydrolysis of the initial benzyl chlorides. 5-chloro-2-methoxy(2-ethoxy)benzyl chlorides in methanol-water are converted into corresponding benzyl alcohols. The reaction of benzyl chlorides with sodium diethylthiophosphite gives benzylthiophosphonates. Biological studies show that the synthesized O,O-dialkyl benzylphosphonates possess fungicidal properties.

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USSR UDC 547.26'118

ITALINSKAYA, T. L., SHVETSOV-SHILOVSKIY, N. I., KHLEBOVA, A. I., and MEL'NIKOV, N. N.

"1,5,2,3-Phosphathiadiazoles"

Leningrad, Zhurnal Obshchey Khimii, Sep 71, Vol 41, No 9, pp 1980-1983

Abstract: Earlier research showed that the reaction of 1-chloro-4-alkyl(aryl)-2-phenyl-1,2-dihydro-1,5,2,3-phosphaoxadiazoles (I) with phosphorus thiotrichloride yielded 1-chloro-1-thio-4-alkyl(aryl)-2-phenyl-1,2-dihydro-1,5,2,3-phosphaoxadiazoles (II). Continuous heating of these compounds with phosphorus thiotrichloride leads to the replacement of oxygen in the ring with sulfur to form 1,5,2,3-phosphathiadiazoles (III). Addition of sulfur and triethylamine hydrochloride fails to affect the (II):(III) product ratio formed in the reaction of (I) with phosphorus thiotrichloride. Distilling the volatile reaction products of compounds (I) with phosphorus thiotrichloride by passing through dry nitrogen and the addition of ferrous trichloride facilitates the formation of compound (III).

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MEL'NIKOV, N. N., KRYLOVA, T. P., and VLADIMIROVA, I. L.

"Reaction of Aminothiophosphate Esters With Acrylate Esters"

Leningrad, Zhurnal Obshchey Khimii, Sep 71, Vol 41, No 9, pp 1984-1987

Abstract: Previous research indicates that aminothiophosphate esters react with acrylonitrile to form addition products at the double bond. The reaction of aminothiophosphates with cinnamate esters yields acylated compounds. This work deals with the reaction of amino thiophosphates with acrylate esters. Monoamino-dithiophosphate esters when treated with methyl acrylate and methyl methacrylate yield addition products at the double bond, contrary to Markovnikov's rule. The course of the above reaction depends on the structure of both the ester and the amine radical.

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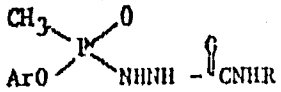
USSR UDC 547.341.26'118,07

MIKHAYLOVA, O. B., MEL'NIKOV, N. N., and GRAPOV, A. F.

"A Method of Making β-Phosphorylated Semicarbazides"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 9, Mar 71, Author's Certificate No 296774, Division C, filed 20 Feb 70, Published 2 Mar 71, p 83

Translation: This Author's Certificate introduces: 1. A method of producing β-phosphorylated semicarbazides of the general formula



where R is an alkyl or aryl, and Ar is an aryl. As a distinguishing feature of the patent, an unsubstituted hydrazide of O-arylmethylphosphonic acid is interacted with alkyl- or arylisocyanate in an organic solvent such as benzene with the application of heat and subsequent isolation of the goal product by conventional methods. 2. A modification of this method distinguished by the fact that heating is done to 80°C.

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USSR UDC 632.95

GUNAR, M. I., MIKHALYUTINA, Yk. B., SHVETSOVA-SHILOVSKAYA, K. D., and MEL'NIKOV, N. N.

"Method of Preparing 0,0-Dialkyl-0-acylnaphthyl Phosphates or Thiophosphates"

USSR Authors' Certificate No 257501, filed 5 Nov 67, published 20 May 70 (from RZh-Khimiya, No 1, 10 Jan 71, Abstract No 1N565P)

Translation: Compounds possessing pesticidal activity of the formula (RO)(R'O)P(X)OY (I) (R and R' = lower alkyl; X = O or S; Y = 1-acetylnaphthyl-2) are obtained by the reaction of (RO)(R'O)P(X)Cl with acetylnaphthol (II) or naphtholate in the presence of K_2CO_3 or NaOH at 70-110° in organic solvent. For example, 0.62 g Na is added to a solution of 5 g II in 50 ml MePh at 90° and stirred 30 min; the unreacted Na is removed; at 100° 5.1 g $(EtO)_2P(S)Cl$ is added and heated 8 hr at 110°. On cooling, 50 ml water is added; the organic layer is rinsed with saturated solution of K_2CO_3 and water, and dried over $MgSO_4$; the solvent is distilled off, to yield after distillation I (R = R' = Et; X = S), yield 63%, boiling point 159-62°/0.14 mm, d_4^{20} 1.2003, $n^{20}D$ 1.5740. The following I's are prepared analogously with a yield of 40-45% (given here are: R = R', X, boiling point in °C/mm,

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GUNAR, M. I., et al., USSR Authors' Certificate No 257501, filed 5 Nov 67, published 20 May 70 (from RZh-Khimiya, No 1, 10 Jan 71, Abstract No 1N565P)

d_4^{20}, $n^{20}D$): Me, S, 172-5/0.2, 1.2544, 1.6050; Me, 0.156-8/0.18, 1.3548, 1.5630; Et, 0, 155-60/0.1, 1.2177, 1.5465. A mixture of 3.72 g II in 50 ml PhMe, 3.49 g (MeO)(EtO)P(S)Cl and 2.9 g K_2CO_3 is heated 7 hr at 90° to yield I (R = Me; R' = Et; X = S), boiling point 170-3°/0.2 mm, d_4^{20} 1.2396, $n^{20}D$ 1.5850.

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UDC 632.95

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MEL'NIKOV, N. N., KHASKIN, B. A., and TORGASHEVA, N. A.

"A Method of Synthesizing Phosphates, Thio- and Dithiophosphates of N-Alkoxypyridinium"

USSR Author's Certificate No 262901, filed 30 Jan 69, published 7 Jul 70 (from RZh-Khimiya, No 3, 10 Feb 71, Abstract No 3N626 P)

Translation: Active pesticides of the general formula $(C_5H_5NOR)^+[O(R'X)-P(O)YR']^-$ (I) (R and R' = lower alkyl; R' = alkyl, aryl, carbamoyl or ester group; X and Y = O or S) are synthesized by interacting pentavalent phosphorus acid esters with pyridine N-oxide. 0.02 Mole of $(MeO)_2PSSPr$ is added to 0.01 mole of pyridine N-oxide and heated for 4 hours at 50-60°C and then for 2 hours at 80-90°C. Upon completion of the reaction, 80 ml of absolute ether are added to the mixture. The resultant oil is repeatedly boiled with ether washed, in C_6H_6 and held in a vacuum at 60°C for 30 minutes. The result is compound I (R = R' = Me, R" = Pr, X = Y = S), yield 64%, $n^{20}D$ 1.5480, d_4^{40} 1.3057. The following compounds (I) are analogously produced (given are R, R', R", X, Y, yield in %, $n^{20}D$, d_4^{40}): Me, Et, 2,4,5-$Cl_3C_6H_2$, S, O, 42, -, melting point 74-76°C; Me, Me, 4-$NO_2C_6H_4$, S, O, 67, 1.5850, 1.4250; Me,

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MEL'NIKOV, N. N., et al., USSR Author's Certificate No 262901, filed 30 Jan 69, published 7 Jul 70 (from RZh-Khimiya, No 3, 10 Feb 71, Abstract No 3N626 P)

Me, $CH_2CONHCH_3$, S, S, 71, 1.5650, 1.3500; Me, Me, Et, S, O, 87, 1.5310, 1.2837; Me, Me, 2,4,5-$Cl_3C_6H_2$, S, O, 60, -, 1.5319; Me, Me, Pr, S, O, 47, 1.5120, 1.2731; Me, Me, O, O, 98, 1.4990, 1.2704.

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USSR

UDC 632.95

MEL'NIKOV, N. N.

"Present Trends in the Development of Production and Application of Pesticides"

Sovremennyye napravleniya razvitiya proizvodstva i primeneniya pestitsidov. Itogi nauki VINITI AN SSSR (cf. English above. Science Summary. All-Union Institute of Scientific and Technical Information, Academy of Sciences of the USSR), Moscow, 1970, 140 pp, ill. 1 r. (from RZh-Khimiya, No 3, 10 Feb 71, Abstract No 3N530 K)

Translation: The author discusses the principal trends in the development and use of modern chemical agents for plant protection, the most important problems of scientific research and their significance, and typical expenditures for development of one chemical are determined. Tables are given summarizing data on the important properties of the latest chemicals and their use. Data are presented on accumulation of individual chemicals in the ambient medium and in various living organisms, and the basic methods for future safe use of pesticides in agriculture are presented.

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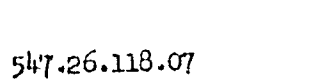
USSR UDC: 547.26.118.07

MEL'NIKOV, N. N., PROKOF'YEVA, A. F., VLADIMIROVA, I. L.

"A Method of Synthesizing O, O-Dialkyl Benzyl Phosphonates"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 14, May 71, Author's Certificate No 301336, Division C, filed 21 Apr 69, published 21 Apr 71, p 67

Translation: This Author's Certificate introduces a method of synthesizing O, O-dialkyl benzyl phosphonates of the general formula



where R is CH_3, C_2H_5, CH_2COCH_3; R' is H, Cl, CH_3; R" is CH_3, C_2H_5, iso-C_3H_7; X and Y are O, S. As a distinguishing feature of the patent, salts of dialkylphosphorous or dialkylthiophosphorous acid are allowed to react with chloroethylated aromatic esters in an inert organic solvent in the presence of heat with the subsequent isolation of the product by conventional methods. The patent also covers a modification of the method distinguished by the fact that the process is carried out at 70-90°.

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USSR UDC 547.241+615.777/779

YAGNYUKOVA, Z. I., SHVETSOVA-SHILOVSKAYA, K. D., and SIL'NIKOV, N. N., All-Union Scientific Research Institute of Chemical Plant Protectants

"Ester-amides of Acylated Arylthiophosphoric Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 1, Jan 71, pp 84-88

Abstract: Twelve ester-amides of acylated aryl thiophosphates of the type $CH_3COC_6H_4OP(S)(OR')NHR''$, where R' is CH_3 through C_3H_7, and R'' is either H or CH_3, were obtained from the corresponding dichloroaryl thiophosphates by treatment with alcohol and subsequent amidation. The resulting ester-amides possess pesticidal activity comparable to the activity of the dialkyl derivatives, but are considerably more toxic warm-blooded animals.

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USSR UDC 547.26'118

AZIZOVA, Sh. A., and MEL'NIKOV, N. N.

"From the Field of Organic Insectofungicides. Phosphorylated Oximes"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 1, Jan 71, pp 88-90

Abstract: A method was developed by the authors for the synthesis of O-phosphorylated oximes with the general structure $C_2H_5OP(S)(NR_1R_2)ON{=}C(R_3R_4)$, where R, through R_4 are alkyls up to C_3H_7, by the reaction of ketoximes with amidochlorothiophosphates in the presence of pyridine. The compounds possess weak insecticidal properties.

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USSR UDC 632.95

MEL'NIKOV, I. A., MEL'NIKOV, N. N., and MASKAKOV, YU. A.

"A Method of Preparing 2-Benzyloxy-4-N-alkylhydroxyl-amino-6-alkylamino-S-triazines"

USSR Authors' Certificate No 250148, filed 3 Nov 67, published 23 Jan 70 (from Referativnyy Zhurnal Khimiya, No 17 10 Sept 70, Abstract No 17 N355 P)

Translation: Physiologically active 2-OCH_2Ph-4-N(R)(OH)-6-NHR'-sym-triazines (I) (R = C_1 - C_3-alkyl; R' = C_1 -C_5-alkyl) are prepared by condensing 2-Cl-4-$PhCH_2O$-6-R'NH-sym-triazines (II) with an excess of N-alkylhydroxylamine. For example 5,2 chlorine hydrate. MeNHOH is 5 ml water at a temperature from -10 to -5°C is neutralized in a stream of N_2 by a solution of 5.2 gm $NaHCO_3$ in 10 ml water. A solution of 8.7 gm of compound II (R' = iso-Pr, melting point 64-5°C) in 20 ml dioxane, and 5.2 gm $NaHCO_3$ in 30 ml water are added simultaneously to the mixture for 7-10 min at 5-10°C. The pH of the mixture is approximately 8 after the addition. The mixture is agitated for 2 hr at 55-60°C and for 1 hr 60°C in a stream of N_2. The mixture is cooled, supplemented by water to the extent of 1/2 its volume, acidified to pH 7 by HCl (acid) or AcOH, saturated with NaCl subjected to ethyl ether extraction (3 x 35 ml), the organic layer is dried with $MgSO_4$ and evaporated, 2 gm of the viscous residue is dissolved in 8 ml of warm EtOH and cooled to 20°C, 20 ml of water is added

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USSR

MEL'NIKOV, I. A., et al., USSR Authors' Certificate No 250148

followed by a 10% solution of NaOH in water until the residue dissolves, the solution is acidified with AcOH to pH 7, the residue is filtered, washed with water, dried on P_2O_5, NaOH, with isolation of 1 gm of compound I (R = Me, R' = iso-Pr), yield 50%, melting point 57-9°C. By an analogous procedure compound I (R = Et, R' = iso-Pr) is prepared with a yield of 70% and a melting point of 120-1°/0.1.

I. A. Mel'nikova.

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USSR UDC 547.86'118

MEL'NIKOV, N. N., SHVETSOVA-SHILOVSKAYA, K. D., and BOGATYREV, I. L.

"Displacement of Pseudohalogens in Phosphinates and Phosphine Oxides"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 7, Jul 70, p 1582

Abstract: A previous article by the authors showed that in phosphonates alkyl groups with high electronegativity such as the trichloromethyl and 2,2,2-trichloro-1-acetoxyethyl group, which can be regarded as pseudohalogens, are displaced by alkoxyl groups under the action of alcohol in the presence of alkalies. Continuing their work in this area, the authors studied the displacement of pseudohalogen groups in phosphinates and phosphine oxides under analogous conditions. It was found that the pseudohalogen group is much more readily displaced by an alkoxyl group in phosphinates and phosphine oxides than in phosphonates. Weaker bases (e.g., trialkylamines) can be used as catalysts.

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USSR

UDC 547.26'118

KHASKIN, B. A., MEL'NIKOV, N. N., and TORGASHEVA, N. A., All Union Scientific Research Institute of Chemical Plant Protective Agents

"Reaction of Pyridine N-Oxide With Pentavalent Phosphorus Acid Esters"

Leningrad, Zhurnal Obshchey Khimii, Vol 41 (103), No 3, Mar 71, pp 531-533

Abstract: In contrast to heterocyclic amines, alkylation of pyridine N-oxide with phosphoric acid esters occurs at the oxygen atom yielding corresponding N-alkoxypyridinium salts; alkaline hydrolysis of these salts gives aldehydes and pyridine. 0.02 g-mole of O-methyl-O-2,4,5-trichlorophenylthiophosphate is added to 0.01 g-mole of pyridine N-oxide and the mixture is heated at 50-60° for 4 hrs, followed by 2 hours at 80-90°. The oil obtained is separated, refluxed with ethyl ether, dissolved in benzene and reprecipitated with absolute ethyl ether to give S-ethyl-O-2,4,5-trichlorophenylthiophosphate of N-methoxypyridinium.

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USSR UDC 547.26'118.122.07

TYRKINA, T. S., SHVETSOVA-SHILOVSKAYA, K. D., and MEL'NIKOV, N. N.

"A Method of Synthesizing 0,0-Dialkyl-S-(1-Oxo-2-Alkylmercapto)--Ethyldithiophosphates"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 14, 1970, Author's Certificate No 266428, filed 17 Jul 68, p 25

Abstract: This Author's Certificate introduces a method of synthesizing 0,0-dialkyl-S-(1-oxo-2-alkylmercapto)-ethyldithiophosohates of the general formula

$$(RO)_2P(S)\text{-}\underset{\underset{O}{\|}}{C}\text{-}CH_2SX$$

where R is an alkyl, and X is an alkyl /sic/. As a distinguishing feature of the patent, 0,0-dialkyl-S-chloracyldithiophosphates are interacted with mercaptans in the presence of acid-binding agents with subsequent isolation of the gal product by a conventional method.

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SHUMYATSKAYA, T. N., TYRKINA, T. S., SVETSOVA-SHILOVSKAYA, K. D., and MEL'NIKOV, N. N.

"A Method of Making 0,0-Dialkyl S-1-one-2-Substituted Ethyl dithiophosphates"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 35, Soviet Patent No 287014, class 12, filed 25 Jun 69, published 19 Nov 70, pp 39-40

Translation: This Author's Certificate introduces: 1. A method of making 0,0-dialkyl S-1-one-2-substituted ethyl dithiophosphates. As a distinguishing feature of the patent, 0,0-dialkyl S-1-one-2-chloroethyl dithiophosphate is treated with the corresponding heterocyclic compound in the presence of an organic base in an organic solvent with subsequent isolation of the product by conventional methods. 2. A modification of this method is distinguished by the fact that the process is carried out at 30-40°C.

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USSR UDC 547.794:543.422

SHVETSOV-SHILOVSKIY, N. I., IGNATOVA, N. P., and [illegible], M. N., All-Union Scientific Research Institute of Chemical Plant Protectants

"Reaction of Substituted Hydrazones with Phosphorus Trichloride"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 7, Jul 70, pp 1501-1505

Abstract: The reaction of phenylhydrazones of aliphatic methyl ketones with phosphorus trichloride, resulting in the formation of 4-alkyl-2-phenyl-1,2,3-phosphadiazoles, is extended to cover other arylhydrazones and acylhydrazones. The interaction of phosphorus trichloride with acetone acetylhydrazone gave 1-chloro-4-methyl-2-acetyl-1,5-dihydro-1,2,3-phosphadiazole (I), the structure of which was confirmed by the presence of an azomethine group (1633 cm^{-1}) and carbonyl amide (1691 cm^{-1}) line in its IR spectrum. I reacted with alcohols in the presence of triethylamine to give 4-methyl-1-alkoxy-2-acetyl-1,5-dihydro-1,2,3-phosphadiazoles and with aromatic amines or nitrogen heterocycles taken in excess to give 4-methyl-1-amido-2-acetyl-1,5-dihydro-1,2,3-phosphadiazoles. The action of triethylamine on I gave 4-methyl-2-acetyl-1,2,3-phosphadiazole.

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USSR UDC 632.95

SHAPOVALOVA, G. K., ROMANOVA, V. V., MARCHENKO, L. F., GUMAR, M.I. SHUMYATSKAYA, T. N., MIKHALYUTINA, YE. B., SHVETSOVA-SHILOVSKAYA, K. D., and MEL'NIKOV, N. N.

"Insecticide"

USSR Authors' Certificate No 244800. filed 9 Feb 68, published 15 Jan 70, (from RZh-Khimiya, No 20 (II), 25 Oct 70, Abstract No 20 N547P by S. LYUBARSKAYA)

Translation: The authors suggest as insecticides compounds of the formula (RO)(R'O)P(X)(OR") (I; R and R' = Me, Et; R" = acetyl-, halogen- or alkyl-substituted phenyl or naphthyl; X = O or S), which are obtained by the interaction of dialkyl chlorophosphates or thiophosphates with the corresponding phenols or naphthols or phenolates in MeCN with K_2CO_3 at 75-80° or in an inert solvent at 90-110°. The following are obtained: I (R = R', R" = substituted phenyl; given are R, substituents in the phenyl ring, X, boiling point in °C/mm, d_4^{20}, $n^{20}D$): Me, 2-Ac, S, 120-6/0.14, 1.2465, 1.5372; Et, 2-Ac, S, 110-4/0.09, 1.1911, 1.5271; Et, 3-Ac, S, 120-4/0.1, 1.1378, 1.5260; Me, 4-Ac, O, 124-30/0.08, 1.2539, 1.5070; Et; 4-Ac, O, 130-3/0.1, 1.1846, 1.4970; Me, 4-Ac, S, 120-3/0.08, 1.2648, 1.5445; Et, 4-Ac, S, 127-30/0.08, 1.1822, 1.5230; Me,

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SHAPOVALOVA, G. K., et al., USSR Authors' Certificate No 244800

2-Ac-4-Cl, S, 136-43/0.15, 1.3519, 1.5510; Et, 2-Ac-4-Cl, S, 126-30/0.13, 1.2531, 1.5293; Et, 2-Ac-5-Cl, S, 125-7/0.1, 1.2542, 1.5325; Me, 2-Ac-6-Cl, 0.127-9/0.11, 1.3555, 1.5118; Me, 4-Ac-2Cl, 0.152-3/0.15, 1.3556, 1.5218; Et, 4-Ac-2-Cl, 0, 159-61/0.12, 1.2699, 1.5094; Me, 4-Ac-2-Cl, S, 135-43/0.18, 1.3463, 1.5538; Me, 2-Ac-4-Me, S, 133-8/0.15, 1.2340, 1.5405; Me, 2-Ac-5-Me, S, 132-8/0.17, 1.1864, 1.5388; Me, 4-Ac-2-Me, S, 153-6/0.18, 1.2400, 1.5465; Et, 4-Ac-3-Me, 0, 150-1/0.2, 1.1740, 1.5015; Me, 4-Ac-3-Me, S, 155-61/0.22, 1.2404, 1.5442; Et, 4-Ac-3-Me, S, 152-4/0.2, 1.1656, 1.5290; Me, 2-Ac-4-Me_2, S, 130-2/0.05, 1.1927, 1.5380; Et, 2-Ac-4, 5-Me_2, S, 135-40/0.05, 1.1312, 1.5200; Et, 2-EtCO, 0, 130-2/0.1, 1.2565, 1.4930; Me, 4-EtCO, 0, 149-52/0.08, 1.2273, 1.5070; Me, 4-EtCO, S, 142-7/0.1, 1.2264, 1.5420; I (R = Me, R' = Et, X = S; R" = substituted phenyl; given here are substituents in the phenyl nucleus, boiling point in °C/mm, d_4^{20}, $n^{20}D$): 4-Ac, 121-4/0.1, 1.2338, 1.5368; 2-Ac, 120-4/0.13, 1.2245, 1.5318; 4-Ac-2,5-Me_2, 156-8/0.05, 1.1896, 1.5375; 4-EtCO, 148-52/0.1, 1.195, 1.5321; I (R" = 2-acetylnaphthyl; given here are R, R', X, boiling point in oC/mm, d_4^{20}, $n^{20}D$): Me, Me, 0, 156-7/0.18, 1.3548, 1.5630; Et, Et, 0, 155-60/0.1, 1.2177, 1.5465; Me, Et, S, 170-3/0.2,

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SHAPOVALOVA, G. K., et al., USSR Authors' Certificate No 244800

1.2396, 1.5850; Et, Et, S, 159-62/0.14, 1.2003, 1.5740. I's are approximately as active as chlorophos against Musca domestica, Calandra orycae and Porthetria dispar and have low toxicity for warm-blooded animals.

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USSR UDC 632.95

MEL'NIKOV, N. N., KHASKIN, B. A., STONOV, L. D., SABLINA, I. V., GORDON, O. G., and GRUZINSKAYA, N. A.

"Desiccant-Defoliant"

USSR Authors' Certificate No 249113, filed 28 Mar 68, published 26 Jan 70 (from RZh-Khimiya, No 20 (II), 25 Oct 70, Abstract No 20 N[illegible] by N. A. GRUZINSKAYA)

Translation: Salts of 4,4'-dipyridylium of general formula [illegible] $[(MeO)_2P(X)O]_m(I)$, where X = O or S, n = 1 when m = 2 or n = 0 when m = 1, are used as plant desiccant-defoliants. I's can be used for the desiccation and defoliation of cotton, potatoes and fruit crops in doses of 0.8-2.5 kg/ha.

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USSR

UDC 632.95

LYALYAKINA, N. P., MEL'NIKOV, N. N., SHVETSOV-SHILOVSKIY, N. I.

"Method of Obtaining 1-Alkyl-3-arylhexahydropyrimidinones-4"

USSR Author's Certificate No 250894, Cl. 12 n, 7/01, (C 07 d), filed 22 Mar 68, published 28 Jan 70 (from RZh-Khimiya, No 19 (II), 10 Oct 70, Abstract No 19 N635) by T. A. BELYAYEVA)

Translation: Substances of the formula $RNCH_2N(R')CH(R'')CH_2CO$ (I) (R = aryl, R', R'' = alkyl), which can be employed in the production of herbicides and plant growth regulators, are synthesized by the interaction of anilides of beta-N-alkylamino acids with HCHO in the presence of KOH. To a solution of 1.5 g 3,4-dichloranilide of beta-N-isobutylalanine in 30 ml alcohol, 6 ml 37% formalin and 0.02-0.04 g KOH are added, the mixture is boiled 4 hours and evaporated, and 1.42 g I (R = $3,4-Cl_2C_6H_3$, R' = iso-Bu, R'' = H, $C_{14}H_{18}C_2N_2O$) is obtained, melting point 85°. Also synthesized are the following I (shown are R, R', R'', empirical formula, yield in %, boiling point in °C/mm or melting point in °C): $3,4-Cl_2C_6H_3$,

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LYALYAKINA, N. P., et al, USSR Author's Certificate No 250894, Cl. 12 n, 7/01, (C 07 d), filed 22 Mar 68, published 28 Jan 70 (from RZh-Khimiya, No 19 (II), 10 Oct 70, Abstract No 19 N635) by T. A. BELYAYEVA)

iso-Pr, H, $C_{13}H_{16}Cl_2N_2O$, 86, 152/1; p-$CH_3O_6H_4$, Bu, N, $C_{15}H_{22}N_2O_2$, 60, 165/0.3; m-$CH_3C_6H_4$, Bu, Me, $C_{16}H_{24}N_2O$, 94, 132/0.15, $n^{20}D$ 1.5292; 3,4-$Cl_2C_6H_3$, Pr, Me, $C_{14}H_{18}Cl_2N_2O$, 82, 35.

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002202020002-1

USSR

UDC 632.95:661.718.1

BAKANOVA, Z. M., MANDEL'BAUM, YA. A., SUFIN, G. S., MELNIKOV, N. N., and ABBAKUMOVA, N. V., All-Union Scientific Research Institute of Chemical Plant Protectants

"Properties of Methylnitrophos and Methods for Its Analysis"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 8, No 1, Jan 70, pp 32-35

Abstract: Chemically pure methylnitrophos consists of two isomers, viz. O,O-dimethyl-O-4-nitro-3-methylphenyl thiophosphate (70-75 percent) and O,O-dimethyl-O-6-nitro-3-methylphenyl thiophosphate (25-30 percent). Isomer I is the principal active ingredient of commercial methylnitrophos, isomer II the synergist for isomer I. Studies conducted in 1964-1968 showed that methylnitrophos matches the insecticidal properties of isomer I (Sumithion, Metathion). This is confirmed by data of the Ternopol' Agricultural Experiment Station on the effectiveness of Metathion and methylnitrophos against the beet leaf miner and beet leaf aphid, as well as by results obtained in experiments of the Georgian Subtropical Laboratory on the effectiveness of

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BAKANOVA, Z. M., et al., Khimiya v Sel'skom Khozyaystve, Vol 8, No 1, Jan 70, pp 32-35

these preparations against the citrus white fly. Both isomers of methylnitrophos, as well as free 3-methyl-4-nitro- and 3-methyl-6-nitrophenols were determined by the authors by the polarographic method. The article describes the analysis procedure.

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002202020002-1

UDC 632.951

USSR

MEL'NIKOV, N. N., All-Union Scientific Research Institute of Chemical Substances for the Protection of Plants

"Promising Varieties of Insecticides"

Moscow, Khimiya v Selskom Khozyaystve, Vol 9, No 3, 1971, pp 34-38

Abstract: Insecticides and acaricides are considered harmful since they can come into contact with the human body. Among these compounds are ammonium and sulfur derivatives and chlororganic preparations, such as DDT. Although these latter compounds are decomposed by microorganisms in the soil, small amounts of them may occasionally enter the fodder and may adversely affect the health of animals. The adverse effect of insecticides is particularly pronounced on animals in the embryonic stage or animals consuming tainted milk.

Data are presented on the contents of aldrin, dieldrin, DDT, and γ - isomer of hexachlorocyclohexane, and methoxychlor in the fodder and in milk. Other data shown included the decomposition rate of insecticides in the soil, the toxicity of insecticides for fish. This latter toxicity may vary over wide ranges. Methylcarbamic acid and phosphoric acid derivatives were the most important and persistent insecticides. Of great significance in

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MEL'NIKOV, N. N., Khimiya v Sel'skom Khozyaystve, Vol 9, No 3, 1971, pp 34-38

the dangerless application of various insecticides was the form in which they are dispersed. With proper choice of composition of a preparation, the toxicity of the active ingredient may be controlled. Particularly promising forms in which insecticides may be applied are microcapsules or microgranules. On a world-wide scale, close to 90 phosphoorganic insecticides and 50 esters of methylcarbamic acid are used at industrial levels, many of them to eliminate carriers of infectious diseases for man. As an example, the use of DDT on Ceylon was credited with a reduction in malaria cases from 2 million in 1950 to 13 in 1964. In 1968 the use of DDT was discontinued and the number of malaria cases exceeded 1 million, whereupon DDT was again fully employed in 1969. Another insecticide developed in the USA was metaphos with an annual production in 1970 of 46,000 ton. The product is extremely persistent and less toxic compared to thiophos. Presently, many other phosphorus-containing insecticides are on the market, such as lebacid, sudrocid, dursban, and many others. Among the phosphoorganic insecticides, which are [illegible] substitutes for DDT, is gardona which on hydrolysis forms chlorosubstituted acetophenone, the effect of which on the external medium has not yet been studied sufficiently. The aromatic esters of methylcarbamic acid are

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MEL'NIKOV, N. N., Khimiya v Sel'skom Khozyaystve, Vol 9, No 3, 1971, pp 34-38

another important group of insecticides, which frequently undergo hydrolysis and oxidation and are thereby changed into compounds which are less toxic toward mammals.

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UDC 632.954:547.495.1

USSR

BAKUMENKO, L. A., MATYUK, L. N., SHVETSOVA-SHILOVSKAYA, K. D., STONOV, L. D., MELANENKOV, N. N., All-Union Scientific Research Institute for Chemical Means of Plant Protection, Moscow, State Committee for Chemistry USSR

"Herbicidal Activity of Some Derivatives of Carbamic Acids"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 8, No 6, Jun 70, pp 51-52

Abstract: A series of β-dialkylaminoethyl esters of N-alkyl- (or aryl) carbamic acids and their quaternary ammonium salts with trimethyl [illegible] diethyl) thiophosphate was synthesized and investigated in [illegible] to their herbicidal activity under laboratory conditions. It was determined that an increase in the chain length of the alkyl radical from 2 to 8 carbon atoms increased the herbicidal activity. The chlorosubstituted arylcarbamic esters were found to be more active than the respective monochlorinated analogues. The activity of β-dialkylaminoethyl esters of N-alkylcarbamic acid was higher than the activity of the N-aryl carbamic acid [illegible].

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BAKURENKO, L. A., et al, Khimiya v Sel'skom Khozyaystve, Vol 8, No 6, Jun 70, pp 51-52

Introduction of the thiophosphoric acid anion increased the herbicidal activity somewhat, keeping the relationship of the chain length to activity.

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UDC: 547.26'118.122.07

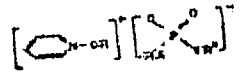
USSR

MEL'NIKOV, N. N., KHASKIN, B. A., TORGASHEVA, N. A.

"A Method of Producing Phosphates, Thiophosphates and Dithiophosphates of N-Alkoxypyridinium"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 7, 4 Feb 70, p 28, patent No 262901, filed 30 Jan 69

Translation: This Author's Certificate introduces a method of producing phosphates, thiophosphates and dithiophosphates of N-alkoxypyridinium of the general formula



where R and R' are a lower alkyl; R' is an alkyl, aryl, carbamoyl or ester group; X, Y are O or S. Pentavalent phosphorus esters are interacted with pyridine N-oxide.

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UNCLASSIFIED PROCESSING DATE--09OCT70

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TITLE--PROPERTIES AND METHODS FOR ANALYZING METHYLNITROPHOS -U-

AUTHOR-(05)-BAKANOVA, Z.M., MANDELBAUM, YA.A., MELNIKOV, N.N., SUPIN, G.S., ABBAKUMOVA, N.V.

COUNTRY OF INFO--USSR

SOURCE--KHIM. SEL. KHOZ. 1970, 8(1), 32-5

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ISOMER, ORGANIC PHOSPHOROUS INSECTICIDE, ORGANIC NITRO COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1990/1159 STEP NO--UR/0394/70/008/001/0032/0035

CIRC ACCESSION NO--AP0109276

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002202020002-1

UNCLASSIFIED PROCESSING DATE--09OCT70

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CIRC ACCESSION NO--AP0109276

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PROPERTIES WERE GIVEN OF METHYLNITROPHOS, A MIXT. OF O,O,DIMETHYL,O,4,NITRO,3, METHYLPHENYLTHIOPHOSPHATE (I) (70-75PERCENT) AND O,O,DIMETHYL,O, 6,NITRO,3,METHYLPHENYLTHIOPHOSPHATE (II) (25-30PERCENT), AND ITS BIOL. ACTIVITY. ISOMER I IS THE ACTIVE SUBSTANCE, AND II ACTED SYNERGISTICALLY. FORMULAE ARE GIVEN PERMITTING CALCN. OF THE CONTENT OF PARTICULAR ISOMERS WITH AN ACCURACY OF SIMILAR TO 2.5PERCENT.

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USSR

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MELNIKOV, N. N., All Union Scientific Research Institute for Chemical Means of Plant Protection, Moscow, State Committee for Chemistry, USSR

UDC: 632.95

"Some Research Goals in the Area of Chemical Plant Protective Agents"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 8, No 4 (78), 1970, pp 38-42

Abstract: Presented is a review with 33 references. There are two periods in Soviet pesticide research: one in which primarily inorganic agents were investigated and another concerned principally with phosphorus compounds. This review, historical in nature, covers only the effective organic pesticides, discussing in chronological order the types of materials synthesized and tested.

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UDC: 546.18

GRAPOV, A. F., MEL'NIKOV, N. N., and RAZVODOVSKAYA, L. V., All-Union Scientific Research Institute for Chemical Means of Plant Protection, Moscow, State Committee for Chemistry USSR

"Cyclodiphosphazanes"

Moscow, Uspekhi Khimii, Vol 39, No 1, Jan '70, pp 39-61

Abstract: Recent foreign and Soviet literature on the chemistry of four-membered N-P ring compounds which might be used in heat-resistant plastics or biologically active preparations is reviewed. The compounds described contain alternating P and N atoms in the ring with tri, tetra, or penta-coordinate P atoms. The reviewed data pertain to determination of the structure of cyclodiphosphazane ring and studies of syntheses, chemical conversions, and physical and chemical properties of cyclodiphosphazanes. Relative positions of atoms in the molecules were determined and the nature of the N-P bond was conclusively established in compounds with tetra- and penta-coordinate P atoms only. These conclusions were made from data obtained by X-ray diffraction study, analysis of the IR, UV, Raman, and NMR spectra, and measurements of dipole moments.

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1/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--SOME RESEARCH TRENDS IN THE FIELD OF CHEMICAL AGENTS FOR PLANT PROTECTION -U-

AUTHOR--MELNIKOV, N.N.

COUNTRY OF INFO--USSR

SOURCE--KHIMIYA V SEL'SKOM KHOZYAYSTVE, 1970, NR 4, PP 38-42

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PESTICIDE, COPPER COMPOUND, ARSENIC COMPOUND, ORGANIC PHOSPHORUS COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3007/1377 STEP NO--UR/0394/70/000/004/0038/0042

CIRC ACCESSION NO--AP0136732

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002202020002-1

2/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0136732

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ARTICLE REVIEWS THE MAIN STEPS IN THE DEVELOPMENT OF SOVIET RESEARCH IN THE FIELD OF CHEMICAL PROTECTION AGENTS FOR PLANTS. TAKING INTO ACCOUNT THE VOLUME OF THE SUBJECT, THE AUTHOR PRESENTS ONLY THE HIGHLIGHTS AND MAIN TRENDS. HE STATES THAT THE HISTORY OF APPLICATION OF THE PLANT PROTECTIVE AGENTS IN THE USSR CAN BE DIVIDED INTO TWO PERIODS; ONE ENDING IN THE EARLY FORTIES WHEN PREDOMINANTLY INORGANIC PREPARATIONS OF ARSENIC AND COPPER, SOME VEGETABLE PRODUCTS AND ONLY A FEW ORGANIC SYNTHETIC SUBSTANCES WERE USED, AND THE SECOND CHARACTERIZED BY WIDE USE OF SYNTHETIC ORGANIC PREPARATIONS. HE NOTES THAT ORGANOMERCURY COMPOUNDS WIDELY USED IN THE BEGINNING OF THE PERIOD WERE GRADUALLY REPLACED BY LESS TOXIC PREPARATIONS. ALSO THERE WAS A TREND TO AVOID PESTICIDES PERSISTENT IN THE ENVIRONMENT. SOVIET RESEARCH IN THE FIELD OF ORGANOPHOSPHORUS PESTICIDES IS EMPHASIZED. A. YE. ARBUZOV AND HIS COWORKERS WERE RESPONSIBLE FOR THE BEGINNING OF THIS RESEARCH. NOW OVER 1,000 PAPERS HAVE BEEN PUBLISHED ON THE SUBJECT AND THE USSR CLAIMS A LEADING POSITION IN THIS FIELD. FACILITY: VSESOYUZNYY NAUCHNO-ISSLEDOVATEL'SKIY INSTITUT KHIMICHESKIKH SREDSTV ZASHCHITY RASTENIY.

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USSR

UDC 632.95

MANDEL'BAUM, YA. A., LOMAKINA, V. I., MEL'NIKOV, N. N.

"Derivatives of Phosphoric and Dithiocarbamic Acids"

V sb. Khim. sredstva zashchity rast. (Chemical Means of Plant Protection — collection of works), vyp. 1, Moscow, 1970, pp 104-110 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12N426)

Translation: In order to study their pesticidal activity, derivatives of phosphoric and dithiocarbamic acids were synthesized with the general formulas $(RO)(R')(X)SCH_2CH_2SC(S)NR''_2$ (I), $(RO)_2P(S)SCH_2COSC(S)NR''_2$ (II) and $R_2NC(S)CH_2-CH_2R'''$ (III) (everywhere, R = alkyl, R' = alkoxyl or aryl, R'' = C_2-C_5-alkyl, R''' = aryloxy or the arylmercapto group X = O or S). A solution of 0.025 moles of $ClCH_2CH_2SC(S)N(Pr\text{-}iso)_2$ in 50 mℓ of ethanol is added to a solution of 0.025 moles of $(BuO)_2P(S)SK$ in 50 mℓ of absolute ethanol at 20° and with mixing. The mixture is heated for 5 hours at 50-65° and filtered, separating I (R = Bu, R' = BuO, R'' = iso-Pr, X = S), $C_{17}H_{36}NO_2PS_4$ from the mother liquor; the yield is 60.7% with a melting point of 46-9° (ethanol). The I is obtained

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MANDEL'BAUM, YA. A., et al., Khim. sredstva zashchity rast., vyp. 1, Moscow, 1970, pp 104-110

analogously (the R, R', R", X and the molecular formula are recalculated, the yield in %, $n^{20}D$, d_4^{20}): Et, EtO, Pr, S, $C_{13}H_{28}NO_2PS_4$, 70.6, 1.5726, 1.639; Pr, PrO, Pr, S, $C_{15}H_{36}NO_2PS_4$, 73, 1.5512, 1.1186; Pr, PrO, iso-C_5H_{11}, S, $C_{19}H_{40}NO_2PS_4$, 84, 1.5343, 1.0882; Bu, BuO, iso-C_5H_{11}, S', $C_{21}H_{44}NO_2PS_4$, 74, 1.5312, 1.0704; Et, Ph, Pr, O, $C_{17}H_{28}NO_2PS_2$, 19, 1.5619, 1.1620. The I are also obtained by the interaction of equimolecular amounts of $R''_2NC(S)SM$ (M is an alkali metal) with $(RO)(R')P(X)SCH_2CH_2Cl$. In particular, I are synthesized by the indicated method (R, R', R", X and the molecular formula, the yield in %, $n^{20}D$ and d_4^{20} are given): Et, EtO, Et, S, $C_{11}H_{24}NO_2PS_4$, 41.6, 1.5509, 1.1648; Pr, PrO, Et, S. $C_{13}H_{28}NO_2PS_4$, 50, 1.5495, 1.1416; Bu, BuO, Et, O, $C_{15}H_{32}NO_3PS_3$, 56.2, 1.5294, 1.1176. A solution of 0.02 moles of $ClCH_2C(O)SC(S)NR''_2$ in 10-20 mℓ of methyl ethyl ketone is added to the suspension of 0.02 moles of (PrO)$_2$PSSK in 80-90 mℓ of methyl ethyl ketone at 20-22°; the mixture is mixed for 12 hours at 50-75°, isolating II (R = R" = Pr), $C_{15}H_{30}NO_3PS_4$, yield 41.2% $n^{20}D$

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MANDEL'BAUM, YA. A., et al., Khim. sredstva zashchity rast., vyp. 1, Moscow, 1970, pp 104-110

1.5091, d_4^{20} 1.0589. The II is obtained analogously (R, R", the molecular formula, the yield in %, $n^{20}D$, d_4^{20} are given): Et, Pr, $C_{13}H_{26}NO_3PS_4$, 25, 1.5218, 1.1496; Pr. Et, $C_{13}H_{26}NO_3PS_4$, 58.7, 1.5419, 1.2104; Bu, Et, $C_{15}H_{30}NO_3PS_4$, 54.6, 1.5366, 1.1917; Bu, Pr, $C_{17}H_{34}NO_3PS_4$, 53, —, —, melting point 42-6°. A solution of 0.025 moles of $R_3NC(S)SCH_2CH_2Cl$ in 10-15 mℓ of C_6H_6 is added to a suspension of PhONa (obtained from 0.025 moles of PhOH and 0.025 metallic Na at 20°) in 75 mℓ of C_6H_6. The mixture is heated for 6 hours at 70-75°, isolating III (R = Pr, R"' = PhO), $C_{15}H_{23}NOS_2$, yield 82%, $n^{20}D$ 1.5581, d_4^{20} 1.0733. The I are obtained analogously (R, R"', the molecular formula, the yield in %, $n^{20}D$, d_4^{20} are given): Et, PhO, $C_{13}H_{19}NOS_2$, 40.3, 1.5828, 1.1282; Et, 4-ClC_6H_4O, $C_{13}H_{18}ClNOS_2$, 63, 1.5889, 1.2047; Et, 2,4-$Cl_2C_6H_3O$, $C_{13}H_{17}Cl_2NOS_2$, 71, 1.5932, 1.2352; Et, PhS, $C_{13}H_{19}NS_3$, 60, 1.6120, 1.1385; Et,

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MANDEL'BAUM, YA. A., et al., Khim. sredstva zashchity rast., vyp. 1, Moscow, 1970, pp 104-110

4-ClC_6H_4S, $C_{13}H_{18}ClNS_3$, 67.5, 1.6361, 1.2493; Pr, 4-ClC_6H_4O, $C_{15}H_{22}ClNOS_2$, 76, 1.5730, 1.1728; Pr, 2,4-$Cl_2C_6H_3O$, $C_{15}H_{21}Cl_2NOS_2$, 62, 1.5732, 1.678; Pr, PhS, $C_{15}H_{23}NS_3$, 61, 1.5955, 1.1086; Pr, 4-ClC_6H_4S, $C_{15}H_{22}ClNS_3$, 50, 1.6120, 1.916. The I-III do not have insecticide activity. Weak herbicidal and significant fungicidal properties were exhibited.

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UDC 632.95

MIL'SHTEYN, I. M., ROGATYKH N. G., SHVETSOVA-SHILOVSKAYA, K. D., MEL'NIKOV, N. N.

"Procedure for Obtaining O-arylsulphonylcarbamoyloximes"

USSR Author's Certificate No 316688, filed 21 Oct 68, published 14 Dec 71 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12N459)

Translation: Compounds with the general formula $RR'C = NOC(O)NHSO_2A$ (I) (R and R' = alkyl or aryl; A = aryl) with acaricid activity are obtained with interaction of the corresponding oxime with arylsulphonylisocyanate. In the presence of Et_3N, 0.015 moles of $PhSO_2NCO$ are added to a solution of 0.015 moles of methyl isopropyl ketone oxime in 50 mℓ of benzene; it is mixed for 4-5 hours at 40-50°; the solvent is distilled off and I is obtained (R = Me, R' = iso-Pr, A = Ph); the yield is 95%, the melting point is 120° (benzene). The I (R = Me, A = Ph) is obtained analogously (R' is recalculated, the yield in %, melting point in °C): Et, 74, 126; Me 97, 124-5; sec-Bu, 95, 113.

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USSR

UDC 632.95

MEL'NIKOV, N. N., STONOV, L. D., KHASKIN, B. A., GORDON, O. G., USACHEVA, N. M., SABLINA, I. V., GRUZINSKAYA, N. A.

"New Herbicide and Desicant — Bipyridyl Phosphate"

V sb. Khim. sredstva zashchity rast. (Chemical Means of Plant Protection -- collection of works), No 1, Moscow, 1970, pp 167-173 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12N492)

Translation: A series of phosphorus-containing salts of 4,4'-bipyridylium with the formula $[NC_5H_4\text{-}C_5H_4NCH_3]^+[(RO)OP(=X)YR']^-$ (I) (R, R', X, Y, the yield in %, the melting point in °C, $n^{20}D$ are presented): Me, Me, O, O, 58, 95-102, --; Me, Pr, O, O, 60, --; 1.4190; Me, Me, S, O, 59, 210 (dil.), --; Me, Me, S, S, 51, 106-7.5, --; Me, 2,4,5-$Cl_3C_6H_2$, S, O, 67, 84-5, --; Et, 2,4,5-$Cl_3C_6H_2$, S, O, 44, --, 1.6141 were synthesized. In order to obtain I, equimolecular amounts of 4,5-bipyridyl and esters of phosphorus acids were heated for 15-20 hours in a solvent (C_6H_6, alcohol, petroleum ether) at 40-100°. With alkylation of the 4,4'-bipyridyl in an excess of esters of phosphorus acids with

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MEL'NIKOV, N. N., et al., Khim. sredstva zashchity rast., No 1, Moscow, 1970, pp 167-173

heating (70-100°) for 10-15 hours in the absence of a solvent or at 20-25° for 2-3 weeks, substances with the formula $[CH_3NC_5H_4-C_5H_4NCH_3]^{2+}[(RX)OP(O)YR']^{2-}$ (II) are obtained (R, R', X, Y, the yield in %, and the melting point in °C are presented): Me, Me, O, O, 63, 117-120 (IIa); Me, Me, S, O, 34, 52-61.5; Me, Et, S, O, 30, 78-80; Me, Me, S, S, 68, 138 (dil.); Me, Et, S, S, 61, 118 (dil.); Me, 2,4,5-$Cl_3C_6H_2$, S, O, 80, 166 (dil.). The IIa has low toxicity for warm blooded animals, significant herbicidal activity and a high defoliating effect.

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UDC 632.95

MANDEL'BAUM, YA. A., SOYFER, R. S., FEDOSEYENKO, L. G., GOLYSHIN, N. M., MEL'NIKOV, N. N.

"A Fungicide"

USSR Author's Certificate No 243998, filed 10 Jul 67, published 2 Nov 71 (from RZh-Khimiya, No 11, Jun 72, Abstract No 11N442)

Translation: O-Aryl S,S-di-(N-alkylcarbamoylmethyl) trithiophosphates (I) are used for disinfecting seeds (cereal grains) against rust and mold fungi. In a concentration of 0.003%, compound I is 100% effective in suppressing growth of Botrytis cinerea, Fusarium moniliforme, Aspergillus niger and other pathogenic fungi. The disinfectant is nontoxic for plants in a dose of 2 kg per ton of wheat seeds and 4 kg per ton of oat seeds.

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USSR

RAZVODOVSKAYA, L. V., GRAPOV, A. F., [redacted] All-Union Scientific Research Institute of Chemical Agents for Plant Protection

"The Reaction of Phosphonic and Thiophosphonic Acid Chlorides With α-Pyrrolidone"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 6, Jun 72, pp 1277-1282

Abstract: The authors investigated the reaction of phosphonic and thiophosphonic acid chlorides with substituted amides of carboxylic acids and lactams, and also studied the reaction of secondary amides of phosphonic acids with acetyl chloride. It was found that when pyrrolidon-2-ylmethylphosphonic acid chloride reacts with primary and secondary amines and anilines, asymmetric diamides of methylphosphonic and thiophosphonic acids are formed. The same products were formed by reacting pyrrolidon-2-ylmethylphosphonic acid with primary amines and anilines. The products of the reaction of pyrrolidon-2-ylmethylphosphonic acid with secondary amines, alcohol and phenol undergo thermal decomposition leading to the formation of α-thiopyrrolidone and its conversion products. When methylphosphonic acid dichloride reacts with α-pyrrolidone, a mixture of pyrrolidon-2-ylmethylphosphonic acid chloride, 1-

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RAZVODOVSKAYA, L. V., et al., Zhurnal Obshchey Khimii, Vol 42(104), No 6, Jun 72, pp 1277-1282

(pyrrolinyl-2) pyrrolidone-2 phosphonate and di(pyrrolidon-2-yl) dimethyl pyrrophosphonate is produced. The authors thank T. F. Tulyakova, M. Sh. Shifman and M. K. Vasilenko for doing the spectral studies.

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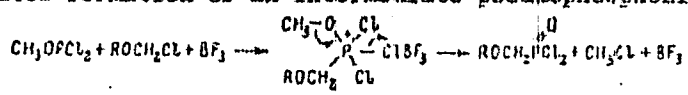
USSR UDC: 547.241

KOZLOVA, T. F., GRAPOV, A. F., MEL'NIKOV, N. N., All-Union Scientific Research Institute of Agents for Plant Protection

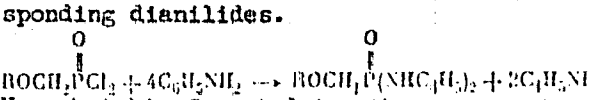
"The Reaction of O-Methyl Dichlorophosphite With Alkyl Chloromethyl Ethers, Catalyzed by Boron Trifluoride Etherate"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 6, Jun 72, pp 1282-1285

Abstract: The authors studied the reaction of alkyl chloromethyl ethers with methyl dichlorophosphite, catalyzed by the etherate of boron trifluoride. When the reaction mixture is heated for several hours at 80-100°C, alkoxymethylphosphonic acid dichlorides are formed in 25-55% yield. The reaction is apparently analogous to the Arbuzov reaction. The electrophilic boron trifluoride facilitates formation of an intermediate pseudophosphonium complex.



Aniline in an ether solution readily converts the alkoxymethyl phosphonic acid dichlorides to the corresponding dianilides.



The authors thank V. V. Negrebetskiy for studying the nmr spectra of the compounds.

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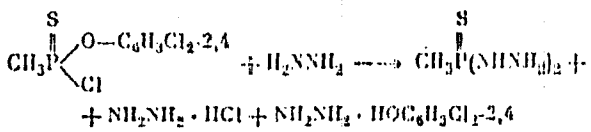
USSR UDC: 547.26'118

MIKHAYLOVA, O. B., GRAPOV, A. F., MEL'NIKOV, N. N., All-Union Scientific Research Institute of Chemical Agents for Plant Protection

"Methylthiophosphonic Acid Dihydrazide"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 6, Jun 72, pp 1420-1421

Abstract: Experimental work was done which showed that hydrazine hydrate acts on O-2,4-dichlorophenyl methylthiophosphonic acid chloride with hydrazinolysis of both the acid chloride and labile ester bonds to give methylthiophosphonic acid dihydrazide. Treatment of the reaction mixture with excess potassium carbonate isolates the end product.



Methylthiophosphonic acid dihydrazide with benzaldehyde and substituted benzaldehydes gives the corresponding hydrazones.

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USSR UDC 632.95

VLADIMIROVA, I. L., GRAPOV, A. F., MANDEL'BAUM, YA. A., and [illegible]

"Fungicidal Mixed Ester-amides and Diamides of Thio- and Dithiophosphoric and Phosphonic Acids"

V sb. Khimiya i primenenive fosforoorgan. soyedin. (Chemistry and Application of Organophosphorus Compounds -- Collection of Works), Moscow, "Nauka," 1972, pp;449-476 (from RZh-Khimiya, No 14, 25 Jul 72, Abstract No 14N485 by T. A. Belyayeva)

Translation: The authors synthesized ester-amides of thiophosphoric acid amides and hydrazides of O-alkyl-S-aryldithiophosphoric acid, ester-amides of methyl-, chloromethyl- and trichloromethylphosphonic acids, O-alkyl N, N'-diaryldiamidothiophosphates, O-alkyl N-alkyl-N'-aryldiamidothiophosphates, amides of thiophosphonic acids, dithiocyclodiphospharanes, and diamides of methylphosphonic acid, in order to study their fungicidal activity. Ester-amides of methylphosphonic acid, although containing groups capable of participating in redox processes, suppress the growth of fungal organisms weakly. Derivatives of thiophosphoric and thiophosphonic acids showed significant fungicidal activity. S-Aryl amidodithiophosphates possess the highest fungicidal activity. The fungicidal activity of the preparations usually rises with an increase of the radical at the nitrogen from C_1 to C_4.

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USSR UDC 632.95'

GRAPOV, A. F., MEL'NIKOV, N. N., ANDREYEVA, YE. I., RASWODOVSKAYA, L. V., PRONCHENKO, T. S., USHANOV, M. T., MIKHAYLOVA, O. B., SMIRNOVA, K. F., and ZBARSKIY, F. SH.

USSR AUthors' Certificate No 276572, Cl. Aol n 9/36, filed 13 Jan 69, published 11 Feb 72 (from RZh-Khimiya, No 20, 25 Oct 72, Abstract No 20N582 by T. A. Belyayeva)

Translation: In order to widen the assortment of effective fungicides for controlling cotton wilt, it is suggested that use as systemic fungicides be made of asymmetric diamides and amidohydramides of alkylphosphonic and alkylthiophosphonic acids of the formula $R'R''N(R)P(X)(NH)_nR'''$ (I) (R and R' = alkyl; R'' = H or alkyl; R''' = unsubstituted or substituted phenyl; n = 1 or 2; X = O or S). I is obtained from amines or hydramides and alkylphosphonic or alkylthiophosphonic acid chlorides. The preparations were tested under field conditions on naturally infected plants. Experimental results showed that, as compared with control, I possesses definite systemic activity, suppressing the development of cotton wilt. Data are presented on tests of I in comparison with phosbutyl.

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USSR UDC 632.96

MEL'NIKOV, N. N.

"New Organophosphorus Pesticides"

V sb. Khimiya i primeneniye forfororgan. soyed. Tr. 4-y konf. (Chemistry and Use of Organophosphorus Compounds, Works of the Fourth Conference -- collection of articles), Moscow, "Nauka", 1972, pp 369-379 (from RZh-Khimiya, No 22, Nov 72, Abstract No 22N387)

Translation: A survey. The organophosphorus insecticides, acaricides and nematocides which have been experimentally and industrially used in agriculture in various countries since 1960 are enumerated. The rate of dissociation of some organophosphorus insecticides in the soil is given. One of the important trends in the use of organophosphorus insecticides in the replacement of persistent organochlorine agents (DDT, hexachlorocyclohexane, heptachlorine, etc.). Data are given on the synergy of contact toxicity of sulfides with methylmercaptophos and preparation K-81. A number of groups of organophosphorus compounds are indicated which could be used or are already being used as fungicides. These compounds are characterized by high selectivity. The author gives a list of organophosphorus herbicides and defoliants which are in use or are being studied in experimental-production conditions. Bibliography of 73 titles. T. A. Belyayeva.

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UDC 547.26'118

AZIZOVA, SH. A., MEL'NIKOV, N. N., VLADIMIROVA, I. L., and NEGEBETSKIY, V. V.

"Synthesis of Mixed Esters of Phosphoric and Phosphonic Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), Vyp 4, 1972, pp 816-820

Abstract: The title reaction was carried out by reacting β-halogenated benzoylpropionic acids with trialkyl phosphites, thereby synthesizing compounds not previously reported in the literature. The reaction can proceed via two pathways: one resulting in the phosphoric acid derivatives; the other in phosphonic acid derivatives. With trimethyl phosphite a mixture of the two types of derivatives result; but with triethyl phosphite, only derivatives of phosphoric acid were detected. Physical properties, elemental composition, and NMR data are given for the studied compounds.

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UDC 547.26'118

PROKOF'YEVA, A. F., MEL'NIKOV, N. N., and VLADIMIROVA, I. L., All-Union Scientific Research Institute of Chemicals for the Protection of Plants

"Reaction of Esters and Esteramides of Thiophosphoric Acid With Substituted Benzyl Chlorides"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), Vyp 4, 1972, pp 820-825

Abstract: At 150-170°C, O,O'-diethyl N-ethylamidothiophosphate reacts with substituted benzyl chlorides in o-dichlorobenzene yielding the corresponding O-ethyl N-ethylamido S-benzyl thiophosphate. Symmetrical dibenzyl sulfides were also synthesized, probably as a result of the further alkylation of the S-benzyl esters of O-ethyl N-ethylamidothiophosphoric acid. O'-ethyl O-phenyl N-ethylamidothiophosphate reacts with the 4-methoxy- and 4-ethoxybenzylchloride to form the corresponding 4-alkoxybenzyl-N-ethylamine, bis(4-alkoxybenzyl)sulfide, and O-phenyl N-ethylamido S-(4-methoxybenzyl) thiophosphates. This reaction proceeds by the simultaneous attack on two nucleophillic centers. Physical data, formulas and IR and NMR constants are given for the synthesized compounds.

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USSR

UDC 547.26'118

KHASKIN, B. A., RYMAREVA, T. G., MEL'NIKOV, N. N., and BELYKH, L. N., All Union Scientific Research Institute of Chemical Plant Protection Agents

"Reaction of Ester-Amides of Phosphorus Thioacids With Sodium Iodide"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 2, Feb 73, pp 435-436

Abstract: In studying the reactions of amidoesters of phosphorus thioacids with sodium iodide it was found that this reaction may take different routes, depending on the structure of the substituent at the nitrogen atom of the amidoester molecule. With two alkyl substituents at the nitrogen atom the reaction carried out at room temperature in acetone after 3-5 hrs will yield the sodium salt of O-methyl-N,N-dialkylamidothiolphosphoric acid and methyl iodide. When a hydrogen atom is attached to the amide, the reaction goes further and after 5 hrs of heating to 120° in acetone in a sealed vial yields methylmercaptan, tetramethylammonium iodide and a polymer.

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UDC 632.981

MEL'NIKOV, N. N., Deputy Director, All-Union Scientific Research Institute of Chemical Agents for Plant Protection

"Chemistry in the Service of the Harvest"

Moscow, Zashchita Rasteniy, No 2, Feb 73, pp 13-14

Abstract: At present representatives of all principal types of chemical agents for the protection of plants are being produced in the USSR. Many chemical agents for this purpose have been developed in the USSR. This includes the seed disinfectants mercuran, mercurhexan, mercuribenzene, Cu trichlorophenolate, and phenthiuram. Use of Cu trichlorophenolate made it possible to solve successively the problem of control of the bacterial blight of cotton. Phenthiuram is effective not only against this disease, but also against root rots and soil insects that damage cotton. It is also effective in the control of fungal and bacterial infections of corn and of legumes. Among pesticides one may mention the contact insecticide methylnitrophos, which has a low toxicity to warm-blooded animals and is effective against many insect pests. The USSR insecticide and acaricide trichlorometaphos-3 is being applied extensively, particularly for the control of flies and in veterinary practice. Carbophos was synthesized in the USSR simultaneously with its synthesis in the USA. Effective

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MEL'NIKOV, N. N., Zashchita Rasteniy, No 2, Feb 73, pp 13-14

fungicides have been developed in the USSR, among them polimartsin and FND, which have received a positive evaluation both in the USSR and abroad. The new herbicides dipyridyl phosphate, meturin, isophos, and others are being subjected to full-scale field tests. Extensive work has been done in the USSR on the organization of the production of known pesticides that are being applied in world practice. This includes an extensive assortment of organophosphorus compounds, carbamic acid derivatives, acaricides of the type of kelthane that have a specific action, and insecticides of the organochlorine class. A production of the fungicides Cu oxychloride, colloidal sulfur, ziram, and zineb and of seed disinfectants on the basis of TMTD and granozan has been organized. The herbicides 2,4-D, 2M-4Ch, Na trichloroacetate, and others are being produced on a large scale.

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14 MAY 1973

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CHEMICAL MEANS OF PROTECTION OF AGRICULTURAL PLANTS AND ANIMALS

[Article by Professor N. N. Mel'nikov; Moscow, Vestnik Akademii Nauk SSSR, Russian, No 3, March 1973, pp 18-24]

In obtaining high and stable yields of various agricultural crops, together with the correct use of fertilizers and different methods of agricultural technology, the protection of plants against diseases, pests and weeds is of enormous importance. In present-day agricultural production the losses due to various types of harmful organisms amount to 54% of the total value of the harvest actually gathered. World losses of grain crops reach almost 500 million tons a year (at a total crop yield of about 960 million tons), of the sugar beet and sugar cane -- 639 million tons (at a total crop yield of 695 million tons), etc. Diseases and ecto- and endoparasites inflict enormous damage in animal husbandry.

A very important place in the struggle against those losses is occupied by various chemical preparations which, depending on their purpose, can be classified into the following groups: means of combatting pests of plants and ecto- and endoparasites of animals -- insecticides, acaricides, nematocides, limacides, antihelminthics, etc; means of combatting diseases of plants and disinfectants -- bactericides, fungicides, seed disinfectants, etc; means contributing to the struggle against weeds and in general to a reduction of labor-intensive work on taking care of sowings -- herbicides, defoliants, desiccants, etc. (We will not deal in this article with the large group of chemicals used in agriculture as stimulators and inhibitors of plant growth.)

In recent years studies have been made of the possibility of the practical use, to combat harmful insects, of such chemicals as sexual attractants (to annihilate insects on small baited sections), sterilizers of plant pests and ectoparasites of animals, antibiotics, and some others.

Widely used to combat harmful vertebrates are various chemicals -- zoocides. Chemical means of protection of plants against pests, diseases and weeds are generally called pesticides.

MEL'NIKOV, N. N.

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002202020002-1

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UDC 547.794:543.422

SHVETSOV-SHILOVSKIY, N. I., IGNATOVA, N. P., BOBKOVA, R. G., MANYUKHINA, V. YA., and MEL'NIKOV, N. N.

"Some Derivatives of Phosphadiazoles-1,2,3"

Leningrad, Zhurnal Obshchey Khimii, Vol 42 (104), No 9, Sep 72, pp 1939-1941

Abstract: Continuing the study of the reaction of phosphorus trichloride with hydrazones, β-Cyanoethylhydrazones of acetone, acetophenone and p-bromoacetophenone were reacted with PCl_3, yielding derivatives of phosphadiazole-1,2,3. Benzoyl- and carbobutoxyhydrazones of acetone reacted with PCl_3 to yield 2-substituted phosphadiazoles. Adding aniline to 2-acetyl-4-methylphosphadiazole along the -P:C bond gave 1-anilino-2-acetyl-4-methylphosphadiazole-1,2,3. Analogously starting with 2-acetyl-4-methyl-1-chloro-1,5-dihydrophosphadiazole and 8-hydroxyquinoline, 2-acetyl-4-methyl-1-(8-hydroxyquinolinyl)phosphadiazole-1,2,3 was obtained.

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UDC 621.039.53(075)

MEL'NIKOV, N. P.

"Structural Forms and Methods of Calculating Nuclear Reactors"

Konstruktivnyye formy i metody rascheta YaR (cf. English above), Second Edition, Revised and Enlarged, Moscow, Atomizdat, 1972, 552 pp, ill., 5 r., 27 kop. (from RZh-50, Yadernyye reaktory, No 11, Nov 72, Abstract No 11.50.73 K)

Translation: In the second edition of the monograph "Structural Forms and Methods of Calculating Nuclear Reactors" (the first edition was published in 1962), problems of developing the shells of nuclear reactors and methods of calculating them considering the development of structural forms over the intervening period are considered. Problems discussed are the theory of the shaping of steel structures for nuclear reactors, their equipment and computational techniques. The more important problems of reactor construction are discussed on this basis and a thorough analysis of structural forms of a large number of nuclear reactors is made considering engineering and analytical relationships. Besides the additional material given in the section on

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