

A guide to veterinary pesticides : a key for veterinary workers to livestock pesticide nomenclature in the literature and in commerce, with notes on usage / Ministry of Agriculture, Fisheries and Food.

Contributors

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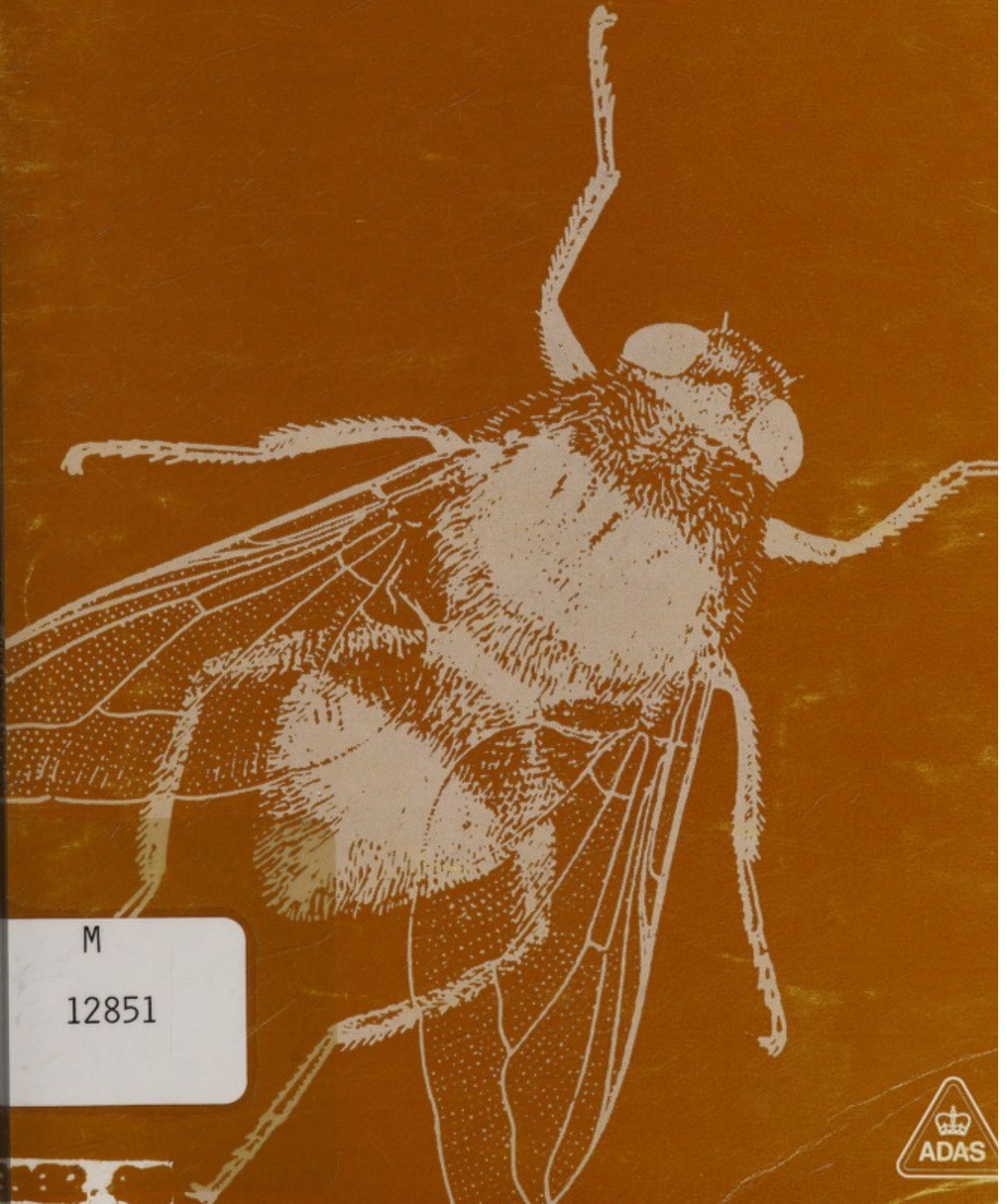
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A guide to Veterinary Pesticides



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Ministry of Agriculture

A Guide to Veterinary

A key for veterinary workers to livestock pesticide nomenclature
literature and in commerce, with notes on usage

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Introduction

This first attempt to provide an easy reference list to pesticide names for veterinary workers in Britain is derived from a previous list compiled by the Entomology Section at MAFF Central Veterinary Laboratory, for use within the Laboratory, and now refers to almost 850 names to be found in veterinary practice or in world literature. It is hoped it will be of use not only to the research worker, but to the practising veterinarian in the field and in his technical reading. Veterinary pesticides have special requirements which often set them apart from the usual range of agricultural products. Nevertheless an enormous number of synonyms are still to be found, and this guide will help the veterinarian to distinguish, for example, between Ruelene and Rulene, Dicofen and Dicophane, or Drinex and Drinox. The opportunity is taken to include a little data on suppliers, formulation and use, giving a few examples of veterinary products: where the symbol (L) is included the formulation is licenced in the UK under the Medicines Act for the use specified. A brief guide to these applications is given in a final table (p. 81).

This list cannot be in any way comprehensive, and the inclusion of any product should not be taken to imply its endorsement by the Ministry of Agriculture, Fisheries and Food. It is merely a compilation of information available in the literature and of that provided by some of the manufacturers in publicity material for the formulations quoted as examples. Proprietary products number many hundreds and space cannot permit many of them to be mentioned.

The recent reappearance of sheep scab has led to the inclusion of gamma-B.H.C. in most winter sheep dips and some summer dips, where the label denotes that the formulation is approved for use against sheep scab. These 'approved' formulations are not specified in the present guide: there are probably at least 200 such labels, and the sheep scab problem, moreover, may be of limited duration.

To use the guide a pesticide should be looked up in the Index; this will refer the reader to the standard (usually BSI) or chemical name[‡] of the product, under which all other information is listed.

An informal guide compiled in this way will be very vulnerable to errors and omissions. It is hoped that those working elsewhere will not be slow to send back notes of corrections or suggestions for additional material which could be provided in an improved edition.

D. W. Tarry

[‡]See BSI publication 1831, 1969 (3 appendices, 1970-74)
Authorities for standard names are indicated on p. 82 (appendix).

This first attempt to provide an easy reference list to pesticides names for veterinary workers in Britain is derived from a previous list compiled by the Entomology Section at MAF's Central Veterinary Laboratory, for use within the Laboratory, and now refers to almost 550 names to be found in veterinary practice or in world literature. It is hoped it will be of use not only to the research worker, but to the practicing veterinarian in the field and in his laboratory. Veterinary practitioners have special requirements which often set them apart from the usual range of agricultural products. No restriction on registration number of products are still to be found, and this guide will help the veterinarian to distinguish, for example, between human and veterinary products and those which are human and veterinary. The opportunity is taken to include a little data on synthesis, formulation and use, giving a few examples of veterinary products where the symbol (V) is included. The information is located in the UK under the heading 'A' for the use of symbols. A brief guide to toxic symptoms is given in a final table (p. 51).

This list cannot be in any way comprehensive and the inclusion of any product should not be taken to imply endorsement by the Ministry of Agriculture, Fisheries and Food. It is simply a compilation of information available in the literature and of that provided by some of the manufacturers to publicly available for the formulators' purposes. Examples of products, products, names, brands and trade names cannot cover many of them to be mentioned.

The recent development of cheap web has led to the inclusion of certain HLL, in some other cheap type and some common type, where the label denotes that the formulation is approved for use against sheep scab. I have reported that formulations are not specified in the present guide; there are probably at least 500 web labels, and the sheep web problem, more and more, may be of limited importance.

To use the guide a pesticide should be looked up in the index; this will refer the reader to the standard (usually HLL or chemical name) of the product, under which all other information is listed.

An informal guide compiled in this way will be very valuable to some and omission. It is hoped that those working elsewhere will not be slow to send back news of corrections or suggestions for additional material which could be provided in an improved edition.

Dr. W. T. T. T.

The full publication HLL, 1969 (2 September, 1970-71)
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200	1104	200	1104

Organochlorine derivatives

1. Bromocyclen*†

Names and examples

Alugan

Bromodan

Use

Ectoparasite control on small animals:
fleas and lice especially. (L)

Also effective for ectoparasites of
pigs and cage birds (Rather toxic
to cats).

Mange treatment: effective for all
types of mite except *Demodex*,
including horse and cattle treatment.

(Not synonymous with Alodan, now
little used)

Suppliers

Hoechst Pharmaceuticals Ltd.

Oral L.D.50(rat) 12 900 mg/kg

Chemical name

5, bromomethyl-1,2,3,4,7,7-hexachlorobicyclo (2,2,1) hept-2-ene
(a cyclic halogenated hydrocarbon).

Application

Aerosol and dust formulations
(at 0.05 – 1.2 %).

Spray bedding etc., for fleas
(0.05 – 1.2 %).

Spray or dip wash products
(e.g., e.c. 42.5 %)
diluted to e.g.,
0.07 % (for fleas)
to 0.6 % (mange mites).

Use 0.2 – 0.5 % suspension, or dust.

2. *Camphechlor*^{*†}

Names and examples

Toxaphene
Polychlorocamphene
Chlorinated camphene
Hercules 3956
Alltox, Tritox
Toxakil
Melipax
Coopertox
Zondatox
Strobane-T
Estonox
Phenacide
Phenatox
Motox
Chemphene
Geniphene
Gy-phene

Use

Mainly tick and mite control
on cattle and equids.

Also for lice and other ectoparasites.

Used widely overseas.

Suppliers

Wellcome Foundation Ltd.,
S.D.C. Pesticides Ltd.,
Hercules Co., USA.

Oral L.D.50(rat): 90 mg/kg

Chemical name

octachlorocamphene mixed isomers ($C_{10}H_{10}Cl_8$)

Application

Usually as 0.25% e.c. dip (for cattle)
or spray with additives to improve
stability (seven day intervals).

Used as spray on livestock
under six months old.

Never mix with gamma-BHC.

3. Chlordane*†

Names and examples

Octachlor
Velsicol 1008
Chlorodox
Belt
Corodane
Intox
Oktastan
Niran
Forclor
M.140
Kypchlor
Syndane 25
Topiclor

Use

Lice on livestock.

Sprays on structures for control of flies, ants and wasps.

Dusts for flea larvae etc.

Application

Dusts 2% or less.

e.c. for dilution to approx 2%;

dusts for application to floor structure.

Suppliers

F. W. Berk Ltd., Tuco (Upjohn)
Chemical Co., Murphy Chemical Ltd.,
S.D.C. Pesticides Ltd., Velsicol Co., USA.

Oral L.D.50(rat) 457–590 mg/kg

Chemical name

1,2,4,5,6,7,10,10-octachloro-4,7,8,9-tetrahydro-4, 7-methylene indane
mixed active isomers

4. *Chlordecone**†

Names and examples

Kepone
G.C.1189

Use

Almost entirely as cockroach and ant bait, in UK.

Can be used in sprays e.g., against larvae of flies and beetles,

Product withdrawn 1977

Suppliers

F. W. Berk Ltd., Allied Chem. Co., USA.

Oral L.D.50(rat) 114–140 mg/kg

Chemical name

decachloro octahydro-1,3,4-methano-2H-cyclobuta-(cd)pentalen-2-one

Application

In pellet form (with groundnut paste): best in containers, approx 10 m intervals. Carried into nests by ants.

Sprays at 2 lb/100 gal water
dusts and granules 5% and 10%.

5. DDT*

Names and examples

Dicophane (B.P.)

Benzochloryl

Chlorophenotane

Parachloride

Gesarol, Guesarol

Estonate

Neocid

Warf (anti-resistant)

Deenate

Deetane

Deestan

Accotox

Dodat

Anofex

Ixodex

Pentachlorin, Pentech

Gyron

Zonda-D

Malacon (with malathion)

Standagam-D

Arkotine

Didimac

Dinocide

Rodgers D.D.T. Liquid Fly Dip
and many proprietary names

Use

Withdrawn in UK from most livestock preparations, e.g., all but a few sheep dips, not widely available.

Mainly for general fly control, and for other nuisance insects.

Suppliers

Originally Geigy Co.; now available from, e.g., Ciba-Geigy (UK) Ltd., Shell Chemicals (UK) Ltd., S.D.C. Pesticides Ltd., May and Baker Ltd., Bugge's Insecticides Ltd., P.B.I. Ltd., Dexstar Chemicals Ltd., Stanhope Chemical Co., Murphy Chemical Ltd.

Oral L.D.50(rat) 113 mg/kg

Chemical name

Technical dichlorodiphenyl-trichlorethane

Application

Sprays as e.c. or w.p. for structures:
up to 5.0%.

Dusts at 5.0%.

Space sprays for flying insects, oil-based, at 0.25%, (+ pyrethrins).

6. Dieldrin*†

Names and examples

HEOD
Octalox
Betalex
Dieldrex, Dieldrite
Dilstan
Quintox
Supadiel
Eldrinol
Endosil
Kynadrin
Alvit
Panoram D-31

Use

Now withdrawn in UK from general veterinary use, including sheep dips.
Bath additive for small animal tick control (USA etc.).

Cockroaches only amongst general pests.

Suppliers

Shell Chemicals (UK) Ltd.,
Wellcome Foundation Ltd., etc.

Oral L.D.50(rat) 46 mg/kg

Chemical name

1,2,3,4,10, 10-hexachloro-6, 7-epoxy-1,4,4a,5,6,7,8,8a, octahydro-exo-1, 4-endo 5,8-dimethanonaphthalene

Application

0.5% dust or spray for special uses.

Spray (w.p.) or lacquer for cockroach control.

7. Endosulfan*†

Names and examples

Thiodan
Thionex
Cyclodan
Chlortiepen
Insectophene
Beosil

Malix
Thimul
Thifor, Thiofor
Hoe 2671
F.M.C. 5462
BIO 5462
NIA 5462

Use

Not in general use for livestock in UK, but used in, e.g., USA for general insect control (e.g., flies) and for livestock. No accumulation in milk or fats.

Suppliers

F.M.C. Corp. (USA), (and, e.g., Hoechst UK Ltd., Boots Co. Ltd. for other agricultural uses)

Oral L.D.50(rat) 80–110 mg/kg

Chemical name

a,methano-2,4,3-benzo(e)dioxathiepin 3-oxide

Application

U.L.V. fogs (25% solution).

Dusts at 1–6%.

e.c. diluted from 35% concentrate.

also available as granules etc.
(especially USA).

8. *Gamma-BHC**†

Names and examples

Lindane† (min. 99% gamma)†

HCH (gamma-HCH)

Gammexane (=mixed isomers)

Gammalin

Isotox, Isotex

Gamtex

Hexone

Unitox, Temadex (part.)

Gamatox ('Superfluid')

Lorexane

Benzahox

Benzachlor extra

Benzex

Gammagof

Gammaphex

Benesan

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Lindafor

Emulpan, and many trade names, e.g.,

Alphagen Prills Fumigant

Leotex louse powder

Colydrin skin treatment

Supagam, Zondagam (extra)

Quellada (shampoo additive)

Lice and Mange Remedy (Osmond)

'Mange Dressing', Skin dressing No. 3
(Wellcome)

Acrodel (oil formulation)

Hexadow, Hexastan

Mergamma, Verindal – and many
others

Use

Mange and lice dressing powders:
(a few sprays for lice). (L)

'Sheep scab' (*Psoroptes*) treatment:
now included temporarily in almost
all winter sheep dips (L)
(carrying 'scab-approved' label), and
the main a.i. in a few special scab dips.

General insect control (e.g., flies).

Ear mange and other local
conditions. (L)

(Ticks and ectoparasites on cattle
overseas).

Application

dusts about 0.6%.

1 lb 6.25% w.p. to 20 gal water.

0.016% required for sheep scab
dipping.

0.5% spray at 1 gal/2500 sq. ft.

about 1% in drops etc. for mange
(e.g., Otoryl (M and B), Auroid
(W. Francis), Framomycin (C. Vet.) and
Canolene (Smith-Kline, with rotenone)

Suppliers

Chevron-Ortho Co., USA; now most suppliers, e.g., Shell Chemicals (UK) Ltd., I.C.I. Ltd., Wellcome Foundation Ltd., R. Young and Co. Ltd., Osmond and Sons, Ltd., F. W. Berk Ltd., Murphy Chemical Ltd., S.D.C. Pesticides Ltd. (overseas), Stafford-Miller Ltd., Day and Sons (Crewe) Ltd., Leonard Smith and Co. Ltd., etc.

Oral L.D.50(rat) 88 mg/kg

Chemical name

1,2,3,4,5,6-hexachlorocyclohexane
(gamma isomer)

9. Heptachlor^{*†}

Names and examples

Velsicol 104
Heptagram
Drinox

Heptamul
E.3314
H-34

Use

Not used directly on livestock; non-systemic.

Application

Available for general control of flies and other insects.

1.5–2.5% dusts

(A stomach poison, used mainly against soil insects).

Sprays, w.p. (25%) or e.c. for dilution to about 2 lb a.i./gal.

Suppliers

Velsicol Co. (USA), F. W. Berk Ltd., and others.

Oral L.D.50(rat) 100 mg/kg

Chemical name

1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene

10. Isobenzan*†

Names and examples

Telodrin

Omtan

S.D.4402

W.L.1650

C.P.14957

R.6700

Use

Has been used as a systemic, but toxic risk to livestock, so now scarce.

Application

Not now used in UK for livestock.

Short life in alkaline medium: can be useful.

General insect control.

Spray dilution (e.c. or w.p.) to give 1–300 g/ha.

Suppliers

Shell Chemicals (UK) Ltd.

Oral L.D.50(rat) 5–10 mg/kg

Chemical name

1,3,4,5,6,7,8,8-octachloro-3a,4,7,7a-tetrahydro-4,7,7-methanophthalan

11. Methoxychlor*†

Names and examples

Marlate

D.M.D.T.

Dimethoxy-DT

Methoxo

Methoxide

Moxie

Alfatox (with diazinon)

Killa-Fly

Use

As DDT (long residual activity) but very safe: not stored in fat or excreted in milk.

Used overseas for dairy fly control; especially horn flies (USA). Non-acaricidal

Application

Spray formulations:

e.c. at 2 lb a.i./gal w.p; 25 or 50% diluted to 0.5 to 0.55 lb/acre. Dusts at 3–5%. Aerosols 3%.

Often self-application by dust bags.

Suppliers

Dupont (UK) Ltd., Ciba-Geigy (UK) Ltd.

Oral L.D.50(rat) 6000 mg/kg

Chemical name

1,1,1-trichloro-2,2-di-(3-methoxy-phenyl)ethane

Organophosphorus derivatives

12. Benoxaphos

Names and examples

Benoxafos (WHO)

Batestan

Hoe 2910

Application

Use

General insect control abroad: use on livestock mainly for ticks.

Sprays, e.g., e.c. at .05%.

Not used in UK.

Suppliers

Hoechst (UK) Ltd.

Oral L.D.50(rat) -

Chemical name

5-(5,7-dichlorobenzoxazol-2-yl methyl) diethyl phosphorothiolothionate

13. *Biotion*

Names and examples

Temephos*†

Abate

Tetrafenphos

Abathion

Difenthos

A.C.52160

Difos

Use

Especially against aquatic larvae in nuisance or disease outbreaks, e.g., mosquitos, midges, blackflies, gnats, sandflies, s.a. fleas.

Supplier

Cyanamid Co. (USA)

Oral L.D.50(rat) 2000–4000 mg/kg

Chemical name

0,0,0',0'-tetramethyl 0,0,-thiodi-*p*-phenylene diphosphorothioate

Application

Spray at .005 ppm (e.c.). Dusts.

Granules 0.2–0.05 lb/ac, to standing water.

14. *Bromphos**†

Names and examples

Brofene

S.1942

Cela S.1942

Nexion

Youngs powder fly dip

Youngs summer mycotic dip

Nexion 'R'

Nexion sheep dip

Use

Sheep dip-blowfly and other ecto-parasites. (L)

Fly and general insect control: low toxicity.

Poultry mites, reptile mites etc.

Application

Dips at 0.05%.

Spray at 3 g/1000 sq. ft for fly control (up to 1.0%).

Dusts or 0.1–0.2% emulsion.

Suppliers

Chevron Co., USA, Boehringer-Ingelheim Ltd., R. Young and Co. Ltd., Tuco (Upjohn) Chemical Co.

Oral L.D.50(rat) 3750–7700 mg/kg

Chemical name

0,0-dimethyl 0-4 bromo-2,5-dichlorophenyl-phosphorothioate

15. *Bromophos-ethyl**†

Names and examples

Filariol
Nexagran
Nexagon, Nexagan
Cela S.225

Use

Cattle ticks and other livestock ectoparasites (not in UK or USA) especially where resistance has appeared.

Effective for mosquito and other aquatic larvae.

Application

e.g. spray at 0.1% (diluted from 40% e.c.) to 0.01% (or dip for sheep, camels, pigs etc.).

20% oil concentrate or 5% granules.

Suppliers

Boehringer-Ingelheim Ltd. – mainly Germany. Celamerck.

Oral L.D.50(rat) 52 mg/kg

Chemical name

0,0-diethyl 0-2,5-dichloro-4-bromo-phenylphosphorothionate

16. Butonate*†

Names and examples

Tribuphon
Butilchlorophos
Butilkhlorofos
Pedix-butonat
Pedix-butofos (USSR)
Pybuton (part)

Use

Animal accommodation – mites and flies especially. (Low toxicity)

Effective for bots and some ectoparasites.

Not sold for livestock use in UK.

Application

25% e.c. diluted to 1 or 2%. Also aerosols and dusts.

Systemically, approx 30 mg/kg for *Gasterophilus*.

Suppliers

Prentis Co. and Thuron Industries (USA)

Oral L.D.50(rat) 1100–1600 mg/kg

Chemical name

1,-butyriiloxy-2,2,2-trichloroethyl phosphonate

17. Carbophenothion*†

Names and examples

Garrathion	Jason Green Label
Trithion	Nephocarp
Stauffer 1303	Ent. 23708
'Defly' dip	R-1303
Dagadip	Lethox
Acarithion	I.C.I. Sheep Dip
'Sovereign' Fluid Dip	

Use

Sheep blowfly dip. (L)

Sheep lice and keds. (L)

Effective against other ectoparasites and flies of cattle, as spray (or dip) for lice and various ticks. (L)

'Back rubbers' for flies etc.

Application

At 0.042% + phenols ('Defly') (1½ gal/200 gal water).

At 0.021% (now + gamma-BHC) (Jason G.L.) + phenols (1 gal 2.1% w.v./100 gal water).

At 0.1%.

2.0% solution in refined oil.

Suppliers

Stauffer Chemicals, R. Young and Co. Ltd., etc.

Oral L.D.50(rat) 32.2 mg/kg

Chemical name

s-(p-chlorophenylthio)methyl-0,0-diethylphosphorodithioate

18. Chlorfenvinphos*[†]

Names and examples

Supona
Birlane
Sapcron
S.I.4072, G.C.4072
S.D.7859
C.8949
Vinyphate
Suprex
C.V.P.
Osmotix Dip
Northern fly dip (Osmond)

Coopers Fly Dip (new type)
Cooper M.D. Powder Dip
Border Liquid Dip
M.D. Powder Dip (Wellcome)
Coopers 'Maggot Fly Spray'
Viper Winter Dip (new type)
(Osmond)
Tixol (with BHC)
Battles Liquid Summer Dip
Battles 'Fluid dip'
Topclip 'Fly and Scab' Dip

Use

Sheep blowfly dip, spray, jetting or shower. (L)

Also for sheep lice and sheep keds. (L)

Also effective for other ectoparasites, e.g., Dog ticks, cattle treatments.

Application

Dip-wash at 0.05%. (Spray wash at 0.1%, e.g., in 'Maggot-Fly Spray' for Cooper-Allman).

Dip at 0.01% or spray at 0.05% with added aluminium sulphate (fungicidal) in 'M.D. Powder Dip', for combined control.

Use 0.1% wash.

Suppliers

(Allied Chemicals, USA), Battle, Hayward and Bower Ltd., Ciba-Geigy (UK) Ltd., Cooper (Ireland) Ltd.,

Osmond and Sons Ltd., Shell Chemicals (UK) Ltd., Wellcome Foundation Ltd.

Oral L.D.50(rat) 10 (-39) mg/kg

Chemical name

2-chloro-1-(2,4-dichlorophenyl) vinyl diethyl phosphate

19. *Chlorpyrifos**†

Names and examples

Dursban

Lorsban

Dowco 179

'Killtick' Dip

Brodan (with BPMC)

Use

Sheep dip, for ticks; only in UK at present. (L)

Widely used abroad for cattle ticks and for general insect control, especially of mosquitoes.

Related 'Fospirate' for treated dog-collars (USA)

Suppliers

Dow Chemical Co. Ltd., R. Young and Co. Ltd., (also Murphy Chemical Ltd. and Boots Co. Ltd., for other uses).

Oral L.D.50(rat) 163 mg/kg

Chemical name

0,0-diethyl 0-3,5,6-trichloro-2-pyridyl phosphorothioate

Application

Dipping only advised, using e.c. at 1 gal/200 gal water. Lambs can be treated from four days individually by drum dipping.

Emulsion sprays and 1% granules, up to 1 lb/acre (USA).

20. Coumaphos*†

Names and examples

Asuntol
Resitox
Muscatox, Muscatol
Baymix
Co-Ral
Bayer 21/199
Negasunt (part)
Meldane

Use

Sheep dip, for blowfly and other ectoparasites. (L).

Systemic, for warble fly treatment. (not now in UK).

Louse powders, cattle, pigs and poultry lice.

Maggot wound dressing.

Suppliers

Bayer UK Ltd., Wellcome Foundation Ltd., etc.

Oral L.D.50(rat) 41 mg/kg

Chemical name

0,0-diethyl 0-(3-chloro-4-methyl-7-coumarinyl) phosphorothioate

Application

Mainly w.p. (0.1 % suspension) i.e., 8 oz 50 % w.p./50 gal (or per 100 gal for lice).

8 % solution, in oil etc.

1 % dust brushed on to large animals. 1 oz 50 % powder in 6 lb sand or dust box.

Cattle 'dust-bags' (Duphar Ltd.) recently in UK. Sprays.

Ointment including sulphanilamide.

21. Coumithoate*†

Names and examples

Dition

Dithion (USSR)

Chromaphon

Colimithoate

Use

Used in some countries as a livestock insecticide and miticide, but not in UK or USA.

Tick control in USSR.

Widely used for fly and mosquito treatment in Italy, including barns, etc.

Suppliers

Montecatini Co. (Italy)

Oral L.D.50(rat) 67(–150) mg/kg

Chemical name

Diethyl 3,4-tetramethylene-7-coumarinyl phosphorothionate

Application

Not available in UK.

Paste formulation (Italy) diluted about 1/15 water.

0.25 to 0.5% e.c. (*Ixodes ricinus*).

Residual spray treatments.

22. *Crotoxyphos**†

Names and examples

Ciodrin

Ectocide

S.D.4294

Flymort 24

Youngs headfly repellent

Use

Especially persistent on livestock – e.g., cattle flies, lice, mange and ticks. (L)

‘Repellent’ for biting and nuisance flies. (L) (*Hydrotaea*, Horn flies) also cleared for use on udders. (L)

In USA as dust, and ‘back rubbers’. Can be effective systemic (pour-on).

Suppliers

Shell Chemicals UK Ltd., Tuco (Upjohn) Chemical Co., R. Young and Co. Ltd., etc.

Oral L.D.50(rat) 125 mg/kg

Chemical name

dimethyl cis-1-methyl-2-(1-phenyl-ethoxycarbonyl)vinyl phosphate

Application

e.c. (or w.p.) spray at 1-3 lb actual per 100 gal, 2-4 quts/cow. Use *spray only*, as dilution for dipping washes causes hydrolysis (0.5–2.0% for flies; 0.15–0.3% lice and mange).

Brushed on to sheep heads or to non-lactating cattle, without dilution, but *before* skin is broken.

1 gal e.c. in 50 gal refined oil.

Do not use in poultry houses.

23. *Cruformate*[†]

Names and examples

Chloromidate

Ruelene

Dowco 132

Dowco 152

M1261

Kempak

Hypolin

'Warble Fly Liquid'

Use

Systemic (pour-on) treatment of cattle for warble fly. (L)

Overseas as cattle spray or dip for ectoparasites, horn fly, etc.

Oestrus ovis (Sheep bot).

Suppliers

Dow Chemical Co. Ltd., Tuco
(Upjohn) Chemical Co., Wellcome
Foundation Ltd.

Oral L.D.50(rat) (660-) 1000 mg/kg

Chemical name

0-4-tert-butyl-2-chlorophenyl-methyl, methylphosphoramidate

Application

8.0% solution in refined oil for systemic treatment, at 25 ml/50 kg body wt.

e.c. for cattle spray at 0.375%, at up to 1 gal/animal. Also used as dips.

21% emulsion as drench 2 ml/10 lb body wt (USA).

24. *Diazinon**†

Names and examples

Basudin
Nucidol, Nucidol 60
Neocidol
Neocide
G.24480
D.B.D.
Spectracide
Dipofene (USA)
Dimpylate
Dazzel

Diazajet
Sarolex
Diazide
Diazitol
Dianol
'Topclip' Sheep Dip
'Dri-Dress' Wound Dressing
Diazinon Fly Dip
'22 Brand' Dip
and many dip formulations

Use

Sheep blowfly dip and lice, ked and mange wash. (L). Effective for ticks.

Cattle wash (flies etc.). (L).

Poultry mite spray, and general insect control.

Powder dressing for blowfly strike wounds.

Suppliers

Ciba-Geigy (UK) Ltd., Boots Co. Ltd., Day, Son and Hewitt Ltd., Fisons Ltd.

Oral L.D.50(rat) 300(–850) mg/kg

Chemical name

0,0-diethyl 0-(2-isopropyl-4 methyl-6 pyrimidyl) phosphorothioate

Application

e.c. (or w.p.) at 0.04% (less for lice, e.g., Nucidol at 2% diluted at rate of 1 fl. oz/gal).
(do. for 'Fisons' Lice and Mange Wash').

e.g., 'Nucidol 60' or 'Topclip' e.c. diluted to 0.25% or less.

Fly spray up to 5.0%.

Hand application.

25. *Dichlofenthion**†

Names and examples

Nemacide
Hexanema
V.C.13
Tri-VC 13
E.C.P.
OVS - 13
Hillvale Dip
Border Winter Dip (Coopers)
Agridip
'Flock O-P Dip'
Shenstone Fly Dip
Pettifer's New Dip etc.

Use

Sheep blowfly dip, or use in spray
races. (L)

Winter dip for sheep keds and
lice. (L)

Suppliers

(Virginia-Carolina Co., USA),
Wellcome Foundation Ltd., Pfizer Co.
Ltd., Tuco (Upjohn) Chemical Co.,
Walter Gregory Divn., Leonard Smith
and Co. Ltd., and many others.

Oral L.D.50(rat) 270 mg/kg

Chemical name

0-(2,4-dichlorophenyl) 0,0-diethyl phosphorothioate

Application

e.c. diluted to 0.04% (i.e., 1 part/200
water for dips and sprays (include
showers) but replenish for sprays at
rate of 5 pt/50 gal water.

Diluted to 0.08%, dipping only.

26. *Dichlorvos**†

Names and examples

D.D.V.P., Dedevap

D.D.V.F.

Nuvan, Nuvan Top

Nuvan 50 EC

Vapona, Vaponite

Herkol, Nerkol

Phoracide

Erasekt

Bayer 19149

C.177

Divipan

Marvex

Nutrax

Nuvap

Astrobot 5

Estrosol (USSR)

Cuprinol

Coopervap

Nogos, Mafu, Oko

(USA names)

No-pest

Atgard

Canogard

Equigard

Task

Tenac

Phosvit

Flyxane

Krecalvin

Cekusan

Use

Flying insect control in animal houses.

Application

w.p. spray (structures) or at 5 ml 50 %

e.c. spray at 5 ml 50 % e.c./2 litres.

Cold fogging 2–8 ml/100 cu. m space.

Aerosol 0.4 % (often + 0.1 %
pyrethrins). Resin bonded strips
(1/2000 sq. ft).

Poultry lice and mites. (L).

0.2 % e.c. spray (7 ml 50 % e.c./2 litres)

'Small animal' parasites. (L)

Aerosol (Ciba-Geigy) may be +
fenitrothion. Also impregnated collars,
medallions etc.

Do not apply to birds or livestock.

Repeat mite treatment in 3–4 days.

Oestrus ovis (Sheep nasal fly).

12.5 % aerosol or 60 mg/m³ vapour
e.g., (USSR).

Bot flies (e.g., Horse intestinal and
nasal; also anthelmintic).

e.g., 'Equigard' – 20 % resin pellets.
e.g., 'Astrobot' – 19 %: also sachets.

(continued)

Suppliers

Ciba-Geigy (UK) Ltd., Shell
Chemicals (UK) Ltd., S.D.C. Pesti-
cides Ltd., Bugge's Insecticides Ltd.,
Arnolds Veterinary Products Ltd.,
F. W. Berk Ltd., Wellcome
Foundation Ltd., Battle, Hayward
and Bower Ltd., and many others.

Oral L.D.50(rat) 80 mg/kg

Chemical name

2,2-dichlorovinyl dimethyl phosphate

27. Dimethoate*†

Names and examples

Pyrimithate*
Pirimitate†
Cygon
Cyanamid 12880
Diothyl
Dimethogen
Rogor
Dimetate
Elimix
Fosfamid (USSR)
I.C.I.29661
E1.12880 (A.C.12880)
N.C.262
Bi 58

Demos L-40
Hypobovin
Roxion, Tri-Roxion
'Mountdale' sheep dip
I.C.I. 'Universal' dip
Asthoate
Daphene
Diosstop
Perfekthion
Ferfekthion
Dantox
Fostion m.m.
Ridmite
Rebelate

} USA synonyms

Use

Sheep dip, for blowfly and winter parasites. (L)

Cattle ticks. (L)

Systemic for warble larvae.

Application

0.04% for blowfly (16% e.c. diluted 1/400 – also for cattle ticks and sheep ticks 0.03–0.05%.
Sheep and cattle lice 0.005% effective (16% e.c. diluted 1/300 in water).

0.04% effective

Not used in UK as systemic

Suppliers

Cyanamid (GB) Ltd., I.C.I. Ltd.,
Fisons Ltd., Murphy Chemical Ltd.

Oral L.D.50(rat) 500–600 mg/kg

Chemical name

O,O-dimethyl s-(N-methyl-carbamoyl-methyl) phosphorodithioate

28. Dioxathion*†

Names and examples

Hercules 528
A.C.528
Delnav
Bercotox
Bercotox 1-600
Navadel
Polythion
Kavadel
Ruphos
'Tick Dip Liquid' (Wellcome)

Use

Ticks on sheep and cattle (also effective against keds, blowfly and lice). (L)

Effective for equids.

Suppliers

Hercules Co. (USA), Wellcome
Foundation Ltd., Bugge's Insecticides
Ltd., Duphar-Midox Ltd.

Oral L.D.50(rat) 43 mg/kg

Chemical name

1, 4-dioxan-2,3-diyl-5,5-bis(0,0-diethyl phosphorodithioate)

Application

Dipping: e.c. diluted to 0.05–0.1 %
(1 gal 'Tick Dip' concentrate to 250
gal water initially. Spray treatment,
for cattle on tick-infested pastures, at
about the same rate ($\frac{1}{4}$ pt to 8 gal).

29. *Ethion*^{*†}

Names and examples

Embathion

Nialate

Diethion (France, SA)

N.I.A.1240, (F.M.C.1240)

Bovinox

Coopathion

Rhodacide

Itopaz

Kwit

Citriol

Ethodan

Use

Especially for ticks on cattle and equids (e.g., where resistance to other pesticides occurs).

Application

Dip or spray (0.056%) at 21 day intervals. Under three months: spray only. e.c. 55.6% ethion, diluted 1 : 1000. Naptha (0.32%) can be included. (w.p. granules etc. available for crops usage only).

Suppliers

Wellcome Foundation Ltd., F.M.C.
Corp. (Niagara Co.) USA.

Oral L.D.50(rat) 65–200 (pure) mg/kg

Chemical name

0,0,0,0-tetraethyl S,-methylene bisphosphorodithioate

30. **Famphur**

(FDA name)

Names and examples

C.38023

C.L.38023

Famophos

Fanphos

Warbex

Bo-Ana

Dovip

and other proprietary names.

Use

Systemic pesticide for treatment
against warble fly; (not UK), etc.

Cattle lice (systemic).

Supplier

Cyanamid of Great Britain Ltd.

Oral L.D.50(rat) 35 mg/kg

Chemical name

dimethyl p-(dimethylsulphamoyl)-phenyl phosphorothionate

Application

Pour-on or injection at 1–5 mg/kg
body wt. Oral at 2.5–10 mg/kg of
33½% premix.

2.5 mg/kg for 30 days.

31. Fenchlorphos*†

Names and examples

Fenchlorvos
Ronnel
E.T.57, E.T.14 impure
Etrolene
Trolene
Nankor, Nanker, Nankor 12E
Ectoral
Vetamac
Lanokil
Hexon 20
Korlan
Rovan (in oil)
Viozene
Agridicin
Edafume
Fentox Sheep Dip
Dayson Fly Spray
Viper Winter Dip, (old type only)
Tontine Dip
Warden Dip, etc.

Use

Sheep dipping. (L)

Spraying for ectoparasites on cattle
or other livestock (e.c. or w.p.). (L)

Systemic: Warble fly and mange (L).

'Back-rubbers' for flies etc.

Application

1 gal 15% e.c. to 200 gal water
(blowfly) or 400 gal (lice) or 70 gal
(ticks).

e.c. at 0.25% for blowfly, or 1 pt
12% w.v., e.c./160 pt water for mange
and fleas, or 1/350 for lice, 1/60 for
cattle ticks.

Pour-on; bolus (15 g/cattle); or in
feed at 3 lb of 0.5–6% per 100 lb
body wt for 14 days.

'Dorsaline' or, e.g., 1 pt 12% e.c. to
11 pt of 3 : 1 mixture of diesel to
engine oil.

Small animal ectoparasites esp.
Demodex.

Fly control, buildings and manure
heaps.

Suppliers

Dow Chemical Co. Ltd., S.D.C.
Pesticides Ltd., Arnold Veterinary
Products Ltd., Osmond and Sons Ltd.,
Day, Son and Hewitt Ltd., Pfizer Ltd.,
Rothwell Plant Health Ltd., Food
Industries Ltd., Day and Sons (Crewe)
Ltd. etc.

Oral L.D.50(rat) 1746 mg/kg

Chemical name

0,0-dimethyl 0-2,6,5-trichlorophenyl phosphorothioate

Tablets and e.c. treatments.

w.p. (or e.c.) spray at c.1.0% (alkali-
stable). (Remove milk and eggs
before spraying).

Fly strings: impregnate in 10-15% e.c.
for buildings.

32. Fenitrothion*†

Names and examples

Bayer 41831

Sumithion

Sumifene

Agrothion 50

M.E.P.

Folithion

Methyl nitrophos

Metathion

Fenitron

Novathion

Dicofen

Nuvanol

Accothion

Cyfen, Cytel

Fenstan

Danathion

Nuvan top (part)

S-110A, S-1102A

S-5660

A.C.47300

Verthion

Use

General insect control, (especially in public health work).

Dust for stored feed grain.

Small animal ectoparasites.

Fly breeding areas (manure pits).

Application

e.c. (50% or 10% concentrate) applied as 0.5%, 25–50 ml/m², also w.p. and dusts.

Applied at about 0.05–0.1% a.i.

e.g., 0.8% with dichlorvos in 'Nuvan Top'.

10% e.c. diluted $\times 400$, at 1–2 litres/m² or 1.5% dust at 5–15 g/m².

Suppliers

I.C.I. Ltd., Ciba-Geigy (UK) Ltd.,

Bayer UK Ltd., Pan-Brittanica

Industries Ltd., Cyanamid (GB) Ltd.,

S.D.C. Pesticides Ltd., Boots Co. Ltd., etc.

Oral L.D.50(rat) 250–(500) mg/kg

Chemical name

0,0-dimethyl 0-3-methyl-4-nitrophenyl phosphorothioate

33. *Fenthion**†

Names and examples

Tiguvon
Bayer S.1752, S.1753
B.29493
Baytex
Mercaptophos
Lebaycid
Baycid
Entex

Queletex
Queleton
Baytan
R.D.5738
O.M.1680
M.P.P.
Figuron
Spotton

Use

Warble fly dressing (systemic) –
effective on lice. (L)

Sheep dip (or spray).

Spraying or fogging for flies in barns,
accommodation.

'Back-rubbers' for cattle (e.g., USA)

Supplier

Bayer UK Ltd.

Application

Pour-on: 2% w/w concentrate (in
liquid paraffin, at 50 ml/200 kg body
wt (oil soln. withdrawn).

e.c. at 0.05% or spray at 0.1%.

e.c. diluted to 0.1–0.2% (appl. 1 gal/
animal). Residual quoted at 9 lb/
100 gal.

1% soln. (or e.c.) in oil (3:1 diesel/
engine oil).

Especially toxic to poultry.

Oral L.D.50(rat) 190 (–315) mg/kg

Chemical name

0,0,dimethyl 0-3-methyl-4-methylthio-phenyl phosphorothioate

34. Iodofenphos*

Names and examples

Jodfenphos†
Iodfenphos
C.9491
Nuvanol N
Alfacron
Elocril
'Youngs Summer Mycotic Dip'
C.G.A.33456
Neporex
Nivano I.N.

Use

Sheep dip (blowfly, lice and keds;
acaricidal). (L)

Pig and cattle lice. (L)
Cattle wash (flies etc.). (L)

Residual fly and insect control; barns,
tips, etc. and manure heaps.

Treatment of feed-grain silos.

Suppliers

Ciba-Geigy (UK) Ltd., R. Young and Co. Ltd.

Oral L.D.50(rat) (1467-) 2100 mg/kg

Chemical name

0-2,5-dichloro-4-iodophenyl 00-dimethyl phosphorothioate

Application

w.p., e.g., Youngs dip at 8 lb/100 gal
water or e.c. dips at 0.05% a.i.
(fungistat included in 'Mycotic Dip'
formulation)

50% w.p. (Nuvanol 'N') at 1.5 oz/5
gal ($\frac{1}{2}$ gal/cow) and at 2 oz/5 gal for
pigs. (NOT for lactating animals).

e.g., Nuvanol 'N' powder 2 lb/10 gal/
5000 sq. ft) (or spray, 0.05-1.0% w.w.
soln.) - use $1\frac{1}{2}$ lb powder/2000 sq. ft

35. *Malathion*[†]

Names and examples

Malathon
Malacide, Malcide
Chemathion
Cythion
E1.4049
Malomix
Malaphos, Malphos
Mercaptothion
Maldison (NZ name)
Malastan
Formal
M.L.T.

Carbophos, Carbofos, Karbofos
(USSR)
Emmatoes
and general formulations, e.g.,
Duramitex
Taskil
Malathexo dust
Malacon (with DDT)
Sadofos 30
Premal
Zithiol

Use

Louse and flea powder. (L)

Acaricide: Poultry 'Red Mite' (L)
and other parasites, pigeon mites and
lice.

Protection of stored feed grain.

General control: flies etc.

Cattle and sheep ectoparasites in USA
etc. (esp. lice, hornfly, ticks).

Application

3.5% for 'small animals' (T.V.L.).

Dusts up to 5.0%, or spray (or brush,
e.c. diluted at 5 fl. oz/2 gal).

1.0% dust, by mechanical admixture.

1.5% w.p. or e.c. dilution.

0.5% w.p. or e.c. wash or spray. Not
UK.

Suppliers

Cyanamid (GB) Ltd., I.C.I. Ltd.,
S.D.C. Pesticides Ltd., Farm
Pharmaceuticals Ltd., Harkers (Crown
Chemicals) Co. Ltd., T.V.L., Murphy
Chemical Ltd., Pan Britannica
Industries Ltd., etc.

Chemical name

0,0-dimethyl phosphorodithioate ester
of diethyl mercaptosuccinate

*Oral L.D.*50(rat) (1375) -2800 mg/kg

36. Naled*[†]

Names and examples

Dibrom
Bromchlorphos
Bromochlorvos
Bromex
RE-4355
Hibrom
Ortho-dibrom

Use

General flying insect control,
including Tabanids and other biting/
nuisance flies – mainly abroad.
Also effective as an acaricide (on
livestock) and for warble grubs.

In USA used as poultry treatment,
and dip formulation.

Supplier

Chevron Co. USA (Ortho div.)

Oral L.D.50(rat) 430 mg/kg

Chemical name

1,2-dibromo-2,2-dichloroethyl dimethylphosphate (related to dichlorvos)

Application

$\frac{1}{8}$ – $\frac{3}{4}$ lb actual/40–100 gal water
or 'space' spray using 3 g/100 cu. ft.

Not available for these uses in UK.

37. *Napthalophos**

Names and examples

Maretin

Rametin

Bayer 9002

Use

Sheep dip (abroad)

(also anthelmintic in UK). (L)

Oestrus ovis (Experimental, overseas).

Application

e.c. (dilution c. 0.05%).

25 or 50 mg/kg body wt.

Supplier

Bayer UK Ltd.

Oral L.D.50(rat) 75 mg/kg

Chemical name

N-(diethoxyphosphinyloxy)- naphthalimide

38. Oxinothiophos

Names and examples

Quintiofos*†

Bacdip

Bayer 9037

Quintiophos

Use

Newly developed acaricide.

Has been used, mostly experimentally, to control ticks on livestock, (of particular interest to deal with resistant strains).

Supplier

Bayer AG (Bayer UK Ltd.)

Oral L.D.50(rat) 150 mg/kg

Chemical name

ethyl quinolin-8-yl phenyl-phosphonothionate

Application

As dip wash, mainly for cattle.

Relatively stable to alkaline media: thus especially useful for dip treatments.

39. Phosphoramidate

Names and examples

Dowco 109

Narlene

Use

Poor contact activity, but useful systemic (low toxicity) (e.g., for Warble fly and anthelmintic). *But* cumulative in body fat.

Related to crufomate.

Application

Pour-on formulations or 1.0% sprays.

Supplier

Dow Chemical Co. Ltd.

Oral L.D.50(rat) 1000 mg/kg

Chemical name

0, methyl, 0(4-tert-butyl-2 chlorophenyl methyl phosphoramidate
(oxygen analogue of chlorfenvinphos)

40. Phosalone*†

Names and examples

Embacide

Zolone

R-P11974

Benzphos

Benzophos

Rubitox

Use

Sheep dipping (L) – blowfly and general ectoparasites.

Pig lice and mange. (L).

Useful broad spectrum insecticide and acaricide.

Suppliers

May and Baker Ltd., Bugge's

Insecticides Ltd., (Rhone-Poulenc, France)

Application

0.05% wash ($\frac{1}{2}$ gal of 20% e.c. to 250 gal water). Or 2 pints/250 gal for lice/keds (and maggot dressing).

Spray: 1 fl. oz/3 gal water (same to dip piglets in drum).

Oral L.D.50(rat) (82–) 120 mg/kg

Chemical name

5-6 chloro-2-oxobenzoxazolin-3-yl-methyl-00-diethyl phosphorodithioate

41. Phosmet*†

Names and examples

Phthalaphos
Ftalafos (USSR)
Prolate
Imidan, Imidine
Imicide
'Poron'
Phioxin
Germisan
ENT.25705
R.1504 (SR.1504)
Appa

Use

Systemic warble fly treatment. (L)
Also controls lice and other cattle
ectoparasites.

Sheep tick dip (effective for other
winter parasites).

Dusts, e.g., for self-application (USA).

Application

4% fluid at 20 ml per cwt body wt
(two treatments for lice, at 10 ml/cwt
body wt) after March 1st.

e.c. diluted to 0.05% for dip wash.
(Not stable in alkaline wash).

Contact application ('dust-bags').

Suppliers

Stauffer Chemicals, R. Young and Co. Ltd.

Oral L.D.50(rat) 230(-300) mg/kg

Chemical name

N-(mercaptomethyl)-phthalimide,S-(0,0-dimethyl phosphorodithioate)

42. *Pirimiphos-methyl*^{††}

Names and examples

PP511

Actellic

Blex

Silosan

Actellifog

Use

(1) Internal spraying of poultry houses and animal accommodation (good acaricide).

(2) Fogging for flies etc.

Useful for storage pests (short persistence and low toxicity).

Application

25 or 50 % e.c. available (for dilution) or 2 % dusts.

U.L.V. sprays.

(domestic formulations with synergized pyrethrins).

Suppliers

I.C.I. Ltd. (Plant Protection Division).

Oral L.D. 50(rat) 2050 mg/kg

Chemical name

2-diethylamino-6-methylpyrimidin-4-yl dimethyl phosphorothionate

43. *Tetrachlorvinphos**†

Names and examples

Rabond
Rabon
Gardona
C.V.M.P.
T.T.V.P.
Flymort 75
S.D.8447
Stirofos (USA)
Ravap
Ostabil
Appex
Gardcide

Use

Poultry parasites. (L)

Dairy and barn fly control; animal houses. (L)

Widely used in crop protection.

Application

e.c. 1.0% on ceilings, perches etc.

0.5% w.p. (initially 1.0%) at 4.0 l./10m² on droppings etc.

2.5% dusts etc. abroad.

Suppliers

Shell Chemicals (UK) Ltd., Tuco
(Upjohn) Chemical Co.

Oral L.D.50(rat) 4000–5000 mg/kg

Chemical name

trans-2-chloro-1-(2,4,5-trichlorophenyl) vinyl dimethyl phosphate

44. *Trichlorphon*

Names and examples

Trichlorfon†
Tugon
Neguvon
Bayer 13/59; L.13/59
B.19673; B.15922
Anthon
Ditrifon
Dipterex
Dylox, Drynex, Drinex
Hypodix
Bubulin (injection)
Metriphorate, Masoten

Chlorophos (Khlrophos, USSR)
Foschlor
Trinex
Cekufon
Danex
Lepidex
Dyrex
D.E.P.
Kilsect (P.B.I.)
Equino-aid
Proxol

Use

Systemic for warble fly: pour-on,
wash or oral. (L) Oestridae (exptl.)

Also effective against other ecto-
parasites (fleas etc. and helminths).

Farm fly control.

Application

6% in oil, 40 mg/kg body wt.
c. 75 mg/kg orally.

2.0% aqueous.

at c. 1.0% but not in UK.

Suppliers

Bayer UK Ltd., Chemagro Co., USA etc.

Oral L.D.50(rat) (450–) 630 mg/kg

Chemical name

dimethyl 2,2,2-trichloro-1-hydroxy-ethylphosphonate

Carbamate derivatives

45. Bendiocarb*†

Names and examples

Ficam

NC.6897

Ficam 80W

S.N.52020

Use

Treatment of internal structure of poultry houses (especially where resistance to O-P's exists).

Food stores.

Supplier

Fisons Ltd.

Application

w.p. (micronized) contains 80%
w/w,a.i. (Ficam 80W)

(Low dermal toxicity, thus safe in accommodation).

Oral L.D.50(rat) 35–100 mg/kg

Chemical name

2,3-isopropylidene-dioxyphenyl methylcarbamate

46. Carbanolate*†

Names and examples

Banol

U.12927

Sok

Use

Ectoparasites.

General insect control.

Widely used in Australia for fleas, ticks and lice, especially on small animals.

Supplier

Tuco (Upjohn) Chemical Co.

Oral L.D.50(rat) 293 mg...kg

Chemical name

6-chloro-3,4-xylenyl-methylcarbamate

(= 2-chloro-4,5-dimethylphenyl methyl carbamate)

Application

Not generally available in UK.

1.0% w/w dust twice weekly, including bedding, kennels etc.

47. *Carbaryl**†

Names and examples

U.C.7744

Sevin

Sebimol, Sebitol

Menaphtame

Rayvon, Ravyon

'Aurex' Liquid

Karbatox, Karbaspray

Dicarbam

Denapon

Hexavin

Vetox

Murvin

Pantrin

Resistox

Septene, Septon

Tricarnam

Zevilon

NAC

Use

Poultry mite control and poultry lice etc. (L)

Small animal ectoparasites (fleas, ticks, lice) and parasitic otitis.

General fly control, e.g., in poultry and animal houses.

Poultry lice and ticks (USA).

Cattle ectoparasites (USA).

Application

Spray: w.p. diluted to 0.25%. Dust, usually at 5.0% (or spray $\frac{1}{2}$ – $1\frac{1}{2}$ lb/100 gal actual).

Usually dusts at 5.0%
1.0% drops + antibiotic (at 10-day intervals).

Spray (w.p.) as above, c. 0.25%.

0.2% w.p., mainly on structure, or 5.0% dust on birds (not in UK).

0.5% w.p. spray (not in UK).

Suppliers

Boots Co. Ltd., May and Baker Ltd., Murphy Chemicals Ltd., S.D.C.

Pesticides Ltd., Smith Kline Animal Health Products Ltd., Union Carbide (USA) etc.

Chemical name

1-naphthyl N-methylcarbamate

*Oral L.D.*50(rat) (500–) 850 mg/kg

48. Butacarb*†

Names and examples

Butacarb Sheep Dip

Butacarb Fly Dip

R.D.14639

Scomol

B.M.K.

Use

Sheep blowfly dip. (L). Effective against some other parasites.

Application

20% w/v e.c. for dilution to 0.05%.

Supplier

Boots Chemical Co. Ltd.

Oral L.D.50(rat) – >4000mg/kg.

Chemical name

3,5-di-t-butylphenyl-N-methyl carbamate

49. *Propoxur*^{*†}

Names and examples

Baygon
Arpocarb, Arprocarb
Matacil
Metacil
Bayer 39007, B.9010
Suncide
Blattanex
Sendran (collars)
Negasunt (part)
'Balfo'
P.H.C.
Undine
58.12.315
and other proprietary names

Use

Dusting for ectoparasites (e.g., small animals). (L)

General insect control, e.g., flies in cow barns.

Cockroaches, ants in stores and accommodation.

Supplier

Bayer UK Ltd.

*Oral L.D.*50(rat) 90–128 mg/kg

Chemical name

O-isopropoxyphenyl methylcarbamate

Application

Dusts at 0.5% and 0.1%.

Sprays (w.p.) approx. 0.5–0.2% giving 29 g/m².

Lacquer available, gives extra persistence, and washable. Baits used for cockroaches, etc.

Other pesticides

50. Pyrethrins

Names and examples

Pyrethrum (extract)
Pybuthrin (synergized)
Pyrenone
Many proprietary names e.g.,
Pynerzone
Pynerzone EC-24
Pinoset (with Resmethrin)

Turbair flydown

'Cooper's Veterinary Insecticide
(pybuthrin)'
Diversey Dairy Flyspray (with
Resmethrin)
'Pestroy', 'Vamoose', 'Ridmite' and
various other s-a and cage-bird
dusts.

Use

Small animal ectoparasites (mainly
for cats, which are O-C sensitive, and
cage-birds) normally with piperonyl
butoxide. (L)

Toxic to reptiles.

Application

Dusts, various (up to about 12.5%).

Small animal ear mites.

Drops + 5% pip. butoxide and 2%
butyl amino benzoate.

Space spray, mainly for flying insects,
e.g., flies in dairies. Gives rapid
'knock-down'. (L)

Synergized e.c. or space spray (in oil)
at 1 pint/60 000 cu. ft.

Suppliers

Various suppliers, e.g., Wellcome
Foundation Ltd., Murphy Chemical
Ltd., S.D.C. Pesticides Ltd., P.B.I.
Ltd., Vet. Drug Co. Ltd., Diversey
Ltd., Stanhope Chemicals Ltd., Ashe
Laboratories Ltd., Bob Martin Co.,
Johnson Ltd.

Oral L.D.50(rat) 584-900 mg/kg

Chemical name

pyrethrins (isomers)

51. Pyrethroids(synthetic)

Names and examples

- a. *Tetramethrin**† (phthalathrin, SP.1103, Neopynamin, F.M.C. 9260, Odex, Rydor Fly Spray).
- b. *Resmethrin**† (=NRDC 104, F.M.C.17370, NIA 17370, Synthrin, For-Syn, benzylfuraline, SPB 1382, Chryson, Diversey Dairy Fly Spray, Pynosect, Turbair Kilsect, Marstan spray).
- c. *Bioresmethrin**† (=NRDC 107, SBP 1390 (+) transisomer of resmethrin, Reslin (+ some aerosols).
- d. *Cismethrin**† (= (+)-cis isomer of resmethrin, NRDC 119. Not generally available).
- e. *Allethrin**† (=Pynamin, Pallethrin, Pyresin, Pyrocode, Forfog-PBPP, Fumovap (mist)).
- f. *Permethrin**† (not generally available). =NRDC 143.

Use

Extremely low toxicity, useful in livestock situations though not generally used yet; except for food storage pests. Persistence can be >4 weeks on protected inert surfaces in some cases.

Suppliers

F.M.C. Corporation (USA), Shell Chemicals (UK) Ltd., I.C.I. Ltd., 'Medo' Chemicals Ltd., Diversey Ltd., Stanhope Chemicals Ltd., Wellcome Foundation Ltd., Rentokil Ltd., Reckitt and Coleman Ltd., P.B.I. Ltd., Killgerm Chemicals Ltd., Environmental Control Systems Ltd., Mitchell Cotts Gp. Ltd., Sumitomo Chemical Co.

Application

Usually fogging and misting formulations (e.g., 0.4% tetramethrin or less, + piperonyl butoxide). Aerosols, dusts.

Toxic to fish.

Oral L.D.50's(rat): in mg/kg
examples

tetramethrin: 20 000
allethrin: 9200
resmethrin: 2000
bioresmethrin: 9000

Chemical name

Various synthetic chrysanthemates

52. Rotenone

Names and examples

Derris, Derrin
Rotocide, Rotefive
Barbaso powder
Nekoe
Nicouline
Tuba-root, Aker-Tuba
Tubatoxin
Hiairi
Protex
Pulvex

Cube, Cube-root
Mexide
Extrox
Canolene (part)
'Cooper's Skin Dressing (Derris '
(Vet. Drug)
Cooper Skin Dressing No. 2'
Demodectic Mange Dressing
(Wellcome)
and many proprietary names.

Use

Wash, for warble fly larvae in the skin, by 'scrubbing brush' method. (L)

Farm livestock, lice and fleas.

Small animal ectoparasites and mange treatment. (L)

Application

About $\frac{1}{2}$ oz/gal (in water + soaps etc.)

2% derris in wash;
skin dressing powder (5.7%), or
wash c. 1.0 g a.i./4 litres (w.p.)

Mange dressing (Cooper's) at 3.3% w/w. Canolene 0.12% rotenone (with gamma- BHC).

Suppliers

Many suppliers, e.g., Wellcome Foundation Ltd., Vet. Drug Co. Ltd., Willington Ltd., Smith, Kline and French Ltd., Medo Chemicals Ltd., etc.

Oral L.D.50(rat) 132–1500 mg/kg

Chemical name

Natural product extracted from *Derris elliptica* and various *Lonchocarpus* species

53. Piperonyl butoxide

Names and examples

Butacide

F.M.C.5273

Cooper's P.B. Dressing

'Pybuthrin' (part)

'Pyrenone' (part)

Included in many formulations of pyrethroids.

Use

Parasitic otitis, and notoedric mange in cats; local lesions of sarcoptes in dogs.

Synergist in fogging and aerosol formulations of pyrethroids.

Suppliers

Various, e.g., Wellcome Foundation Ltd.

Oral L.D.50(rat) 7500 mg/kg

Chemical name

5-(2-(2-butoxyethoxy)ethoxymethyl)-6-propyl-1,3-benzodioxole

Application

Local application of solution: e.g., 5% w/w + 2% butyl aminobenzoate (repeat at seven day intervals).

Approx. 5.0% added for rapid 'knock-down' action (usually 8 : 1 w/w pyrethrins).

54. *Benzyl benzoate*

Names and examples

Ascabiol (includes additives)

Temadex (part)

Benylate

Use

Sarcoptic mange and parasitic otitis of dogs and rabbits. (L)

Also for lice. (L) (Not for cats).

Suppliers

May and Baker Ltd., Hoechst UK

Ltd., Wellcome Foundation Ltd.

Oral L.D.50(rat) c. 1700 mg/kg

Chemical name

Benzyl benzoate

Application

As 25% oil-water emulsion, to be diluted for extensive application, or as drops for otitis. Re-treat every 3-6 days.

55. Arsenic compounds

Names and examples

a. Arsenic trioxide

e.g., 'Gold Label' Paste dip

b. Calcium arsenate=Tricalcium arsenate

Kilmag

Spray-cal, Spra-cal

Kalo

Pencal

Chip-cal

Flac

Nihonat

c. Sodium arsenite = Chem-sen Penite

Atlas A

Kill-all

Chem Pels C.

Use

a. Arsenic trioxide: Sheep dip only,
for sheep blowfly (effective for keds,
etc.).

b. Sodium arsenite now only for
certain quarantine dipping require-
ments (USA).

c. Calcium arsenate used in e.g., USA
for poultry houses etc.

Mostly crop treatment, but:

N.B. 'Paris green' mosquito larvicide
copper acetoarsenite solution on ponds.

Application

1 lb of 10.3% w/w paste to 6 gal
water (includes 11.8% phenols +
BHC).

As w.p. (or dust), up to 26% arsenic,
at 1-3 lb/100 gal water for spraying.

Suppliers

R. Young and Co. Ltd.; various crop
chemicals suppliers.

Chemical names

Arsenic trioxide = As_2O_3

Calcium arsenate = $\text{Ca}_3(\text{AsO}_4)_2$

Oral L.D.50(rat) 35 mg/kg

56. Borax

Names and examples

Sodium tetraborate

Borascu

Boro-Spray

Neobar, Neobor

Polybor

Sterinox

Panant

Use

Sheep blowfly attack – topical treatment.

Housefly larvae in manure heaps, chicken houses.

Ants, cockroaches, silverfish.

Mange dressing additive.

(Widely used as soil sterilant . . . but note borax is highly phytotoxic).

Suppliers

Many, for various traditional uses.

Oral L.D.50(rat) 4980 mg/kg

Chemical name

Sodium tetraborate decahydrate ($\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$)

Application

Application by hand to 'struck' areas.

Dry or as a dry bait: Granules at 10% upwards.

For many purposes mixed with dry cereal bait.

e.g., in sulphur dressings.

57. Organic thiocyanates

Names and examples

e.g., Lethane 384

Butyl 'carbitol' thiocyanate

Butyl 'carbitol' rhodanate

'Keep-off' farm repellent

Days' Farm Flyspray

Use

Fly control in agricultural premises:
'knockdown' effect especially. Not
very widely sold.

Kennels, stables, barns; included in
some repellents.
Good ovicide.

Mosquito control overseas.

Suppliers

Day and Sons, Ltd., originally Rohm
and Haas Ltd., (mainly USA).

Oral L.D.50(rat) 90 mg/kg

Chemical name

beta-butoxy beta-thiocyanodiethyl ether

Application

Up to 2.5% e.g., with piperonyl
butoxide as synergist; mainly k.d.
aerosols.

1.5% dusts.
(Injurious to plants).
Lethane 384 = 50% w/v in kerosene.

Thermal fogging methods.

N.B. (c.f. Lethane 60 = 2-thiocyano-
ethyl dodecanoate, now obsolete).

58. Organotin compounds

Names and examples

Mostly triphenyltin ('Fentin')[†] compounds, e.g.,

Fentin chloride = Fentichlor, G.C.8993, Tinmate, TPTOM.

Fentin hydroxide = Erithane 50, Dowco 186, Farmatin, TPTM.

Fentin acetate = Brestan, Batasan, Bedilan, G.C.6936, TPTA.

Other groups, e.g., tributyl tin oxide
also important in agriculture.

Use

Sheep treatment overseas where blow-fly control has led to resistance.

Mange dressing (small animals) (L)
especially against *Demodex* (Fentichlor).

Organotin compounds widely used as
crop fungicidal sprays.

Application

Spray or dip formulations –
Not available in UK.

Local application (e.g., Willowderm).

Suppliers

Hoechst Pharmaceuticals Ltd., Bayer
UK Ltd., Boots Chemical Co. Ltd.,
Willows Francis Ltd., Philips-Duphar
Chemical Co.

Oral L.D.50(rat)

fentin chloride 209 mg/kg

fentin acetate 125 mg/kg

tributyl tin oxide 200 mg/kg

Chemical names

Various

59. Sulphur

Names and examples

Sulfur
Calfalfa
R.M.S.
Kolofof
Thiovit, Thiolux
Spersul, Elosal
Microsulf
Sulfaloid
Sulfrex, Sulkol
Cosan
Hexasul etc.

also 'Cooper's Skin Dressing No. 1' (= Anti-sarcoptic dressing)
'Skin Dressing (Sulphur)' (Vet. Drug Co.),
and other proprietary names.

Use

Louse control on livestock and small animals.

Sarcoptic mange, Chorioptic mange,
and associated dermatitis
(Pigs, dogs, horses, cattle).

Widely used in horticulture and crop
pest work.

Suppliers

Various suppliers, e.g., Bayer UK Ltd.,
Bugge's Insecticides Ltd., Vet. Drug
Co., Duphar-Midox Ltd., Hoechst
UK Ltd.

Application

Generally as dust 22%–95%, a.i.
Do not combine with oils.
(Can be applied from 'back-rubber'
bags).

22% sulphur (Wellcome dressing) +
borax.

Chemical name

S₈ (finely divided)

Oral L.D.50(rat) non-toxic but can
irritate skin

60. Lime-sulphur

Names and examples

Orthorix

Calcium polysulphides

(Calcium tetrasulphide + pentasulphide (<30%)) with calcium thiosulphides. (small amounts).

Use

Mainly overseas (e.g., Australia) in sheep dips for fungicidal/ectoparasite control.

Lice treatment (poultry etc.).

An old-style product widely used for crop pests but largely superseded for livestock.

Suppliers

Various formulators: traditional use since 19th century.

Oral L.D.50: a.i. is elemental S, (see 59)
– no evidence of toxicity.

Chemical names

CaS_4 , CaS_2 , CaS_6 and CaS_5

Application

Aqueous, up to 5%.

Dusts at about 2%.

Caustic and unpleasant.

61. Inorganic fluorine compounds

Names and examples

Sodium fluoride (Florocid, Villiaimite)

Sodium aluminium fluoride (Cryolite, Kryolith, Kryocide, Koyocide)

Sodium fluosilicate (e.g., in Dri-die, Silikil)

Magnesium fluosilicate (Butimide)

Use

Mainly used for crop pest and cockroach (bait) control, and rodent control.

Fluosilicate is used abroad (e.g., in USA) for crawling insects in piggeries and other premises.

Generally superseded.

Application

Dri-die (USA) = 95.5% silica gel, 1.5% fluosilicate.

As dust up to 50%, or 5% bran bait. Not compatible with alkalis.

Residues cumulative.

Suppliers

Various overseas companies, e.g., in USA.

Oral L.D.50's sodium fluoride (man)
75 mg/kg
sodium fluosilicate (rat)
125 mg/kg

Chemical names

NaF, Na₃AlF₆, Na₂SiF₆

62. Additional compounds

The following are amongst the additional compounds from the agricultural and other fields, occasionally the subject of testing or small-scale use for veterinary ectoparasites such as mange mites or biting flies.

Alkamate

Alkyl carbaryl, alkyl sevin (good systemic)

*Acephate**†

Orthene, Ortho 12-420, Ortran R.E.12420 (Chevron Co.)

*Amitraz**†

Trazaped, R.D.27419 Mitac, Taktic, Triazid, B.T.S.27419 (Boots Co.)

Bacillus thuringiensis

Bacterial insecticide used for, e.g., control of fly breeding in manure (normal uses crop pests and forestry), available in various proprietary formulations, e.g., Agritol, Bakthane, Biotrol, Dipel, Larvatrol, Thuricide Tribactur, BTV (BTB), Buthurin; most overseas.

*Chlordimeform**†

Fundal, Acaron Galecron, Chlorfedine, E.P.333, Schering 36268, C.8514 (a formamidine, Ciba). (Especially useful as an acaricide).

Cythioate

Cyffee, Proban, A.C.26691 (Cyanamide, s-a treatment (L))

*Dichlorophen**†

Halophen, including synergist; Dichlorofen Canolene (part) (Smith Kline) (L)

*Dicrotophos**†

Bidrin, C.709, Carbicron, Ektaphos, S.D.3562

Heptenophos

HOE 2982, Ragadan (related to holoalkyl phosphates).

*Leptophos**†

Phosvel, Abar, VC S-506, MBCP (Velsicol Co.)

Lucijet

Baycide

Mesulphen

Caldorene (part); Temodex (part) (Bayer and Wellcome/mange dressing)

*Methidathion**†

Ultracide, Supracide, G.S.13005, W.C.2964, etc.

*Monosulfiram**

Tetmosol (I.C.I., mange dressing and soap treatments) (L)
(=tetraethylthiuram monosulphide)

T.H. 6040

=Difluron*, Diflubenzuron, Dimilin. (Urea compound, development inhibitor)

Several other well-known pesticides are widely used in agricultural practice but for various reasons are unsuitable for veterinary use. These may be investigated in the available reference lists.

63. Repellents

Dimethyl phthalate

D.M.P. ($C_{10}H_{10}O_4$), Dimp etc.
(L.D.50 : 8000 mg/kg) most widely used but has a few hours persistence only)

Diethyltoluamide

D.E.T., metadelphene, deltamide, detamide, deet etc.
(L.D.50 : 2000 mg/kg; Hercules Co.)

Dibutyl phthalate

D.B.P., $C_{16}H_{22}O_4$ (L.D.50 : 20 000 mg/kg.) Less usual. More persistent than D.M.P. but less effective against mites.

Available in various veterinary formulations, e.g.,

Xylopel cream (for wound dressing, Astra). 10% D.M.P. + antiseptic.
Hydrophane insect repellent
Battles horse and cattle fly repellent
Extra-tail insect repellent (for equids - Kalium Products Ltd.)
Fly-pel repellent
Radiol fly repellent (30% D.M.P., 5% D.E.T.)

Other known fly repellents, mostly not available in UK in veterinary formulations, are:

Citronella oil

= Banfly (Willington), Crown wound dressing aerosol
Cooper Head Fly Dressing and others. (UK)

Tabatrex

= tabutrex, dibutyl succinate. (L.D.50, 8000 mg/kg) Glenn Co. (USA)

MGK 326 (R-326)

= Dipropyl isocinchomeronate (L.D.50, 5320 mg/kg), often combined in sprays with pesticides (USA) for livestock and pets. Used for bushfly in Australia (0.2-0.4 %).

Carboxide

= Karboksid, used in USSR

Hexamid

= Hexamethylene benzamide

Repellin

= N benzoyl piperidine

Repellin B

= N,N-diethylamide phenoxacetate

Methoquin butyl and other cinchonates

= butyl 3-methylcinchonate: Often appear in overseas experimental work, but not commercially used

Dibutylamide valerianate

= experimental

D.P. Repellant 887, BASF 40881, M.G.K. 11, 874, etc.

Produced for non-veterinary uses

(continued)

Pesticide formulations

Certain pesticides said to have a repellent action are sold as 'repellents'. Such are:

Crotoxypfos

Youngs Headfly Repellent Flymort 24 ('L') – sheep; – non-lactating cattle)

Lethane 384

'Keep-Off' Farm Repellent (L)

Coumaphos

Some older formulations (e.g., Duphar repellent)

Methoxychlor

Mainly in USA against horn fly

Tetrachlorvinphos

Mainly in USA against horn fly (Shell Chem. Co.)

Pyrethrins

known to be irritant and repellent to insects

No livestock insect repellent is known to have more than a brief residual action

Quick guide to some compounds available for specific purposes

Livestock	Flies	Lice	Ticks	Mange	Others
Cattle	<i>Warble grubs</i> 20, 23, 31, 33 41, 44, 52 <i>Biting flies:</i> 17, 18, 22, 24, 31, 34 <i>Barns*</i> 14, 24, 33, 26, 31, 35, 43, 47, 50	8, 20, 22, 27, 28, 41, 52, 17, 24 31, 33, 34	22, 27, 19, 28, 29, 31, 41, 17	8, 22, 31, 41, 52, 24	<i>Manure tips</i> 31, 32, 43
Sheep and Goats	<i>Blowfly strike</i> 8, 14, 17, 18, 20, 24, 25, 27, 28, 31, 34, 40, 48	8, 17, 24, 14, 18, 20, 25, 27, 28, 31, 34, 40, 48	18, 19, 24, 27, 28, 31, 34, 40, 41	8, 24, 25, 31, 34, 40	<i>Keds</i> 14, 17, 24, 25, 28, 34, 40, 48 <i>Nasal Fly</i> 26, 44, 23
Horses	<i>Stables*</i> 26, 31, 43, 50, 52	28	28, 29, 31	31, 24 (?)	<i>Bots</i> 26
Pigs	<i>Barns*, Piggeries</i> 24, 14, 26, 33, 31, 35, 43, 50	18, 20, 40, 52		40, 8, 24	<i>Fleas</i> 34, 40, 50, 52
Poultry	<i>Poultry houses</i> 14, 24, 26, 43, 47, 50	20, 24, 26, 35, 47		<i>Mites</i> 24, 26, 35, 43, 47, 12	<i>Fleas</i> 24, 26, 35, 43
Small animals (especially dogs and cats)	<i>Kennels etc.</i> 26, 49, 50, 3	1, 26, 30, 35, 49, 50, 54	1, 18, 26, 49, 50, 52, 32, 62	1, 30, 52, 54, 8, 31 58	<i>Fleas</i> 1, 26, 49, 62, 50, 32, 35 <i>Treated collars:</i> 8, 26, etc.

The above table directs the user to products available for control of the pests indicated. It does not constitute a recommendation by MAFF for these applications.

Appendix

Abbreviations used in the nomenclature

Code initials used in pesticide numbers, especially before a standard name has been developed, serve as a guide to the manufacturer concerned. Examples from this list are:

A.C.	Cyanamid
B.	Bayer
C.	Ciba-Geigy
C.G.A.	Ciba-Geigy
E.	Bayer
F.M.C.	F.M.C. Co.
G.	Ciba-Geigy
G.C.	Allied Chemicals
G.S.	Ciba-Geigy
Hoe	Hoechst
M.	Montecatini
N.C.	Fisons
N.I.A.	Niagara
'Ortho'	Chevron
P.P.	Plant Protection
R.	Stauffer
R.D.	Boots
R.P.	Rhone-Poulenc
S.	Bayer, Sumitomo
S.D.	Shell
S.N.	Schering
S.R.	Bayer, Chevron
U.	Upjohn
U.C.	Union Carbide
V.S.C.	Velsicol

The following abbreviations are used in the text:

a.i.	= active ingredient
cu. ft.	= cubic feet
dil.	= dilution
e.c.	= emulsifiable concentrate
fl. oz	= fluid ounce
gal	= gallon
kg	= kilogram
l.	= litre
lb	= pound
m	= metre
ml	= millilitre
pt	= pint
qts	= quarts
s.a.	= small animals
sq. ft.	= square feet
w.p.	= wettable (dispersible) powder
w/w	= weight to weight
w/v	= weight to volume
*	= BSI standard name
†	= ISO standard name

Sources of information

Amongst recent pesticides lists which may help the reader to identify unfamiliar names are:

Pesticide Manual (5th edition) 1977
by H. Martin and C. R. Worthing

British Crop Protection Council

Approved products for farmers and
growers, 1977. (Ministry of
Agriculture, Fisheries and Food).

HMSO, London (Crop chemicals
only)

British Agrochemicals Association
Directory, 1975.

The Association, London.

Pest Articles and News Summaries
(PANS) Pesticide Index (1976 revision)

Centre for Overseas Pest Research,
London.

Agricultural Chemicals, Book 1.
Insecticides, Acaricides and Ovicides
by W. T. Thompson (1976 revision)

Thomson Publications, California,
USA.

Suggested Guide for the use of
insecticides to control insects affecting
crops, livestock, households, stored
products and forest products. (1968).

United States Department of
Agriculture, ARS Agriculture
Handbook No. 331.



Notes





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