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2,898,263

PESTICIDAL PETROLEUM COMPOSITION AND USE THEREOF

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No Drawing. Application January 18, 1955
Serial No. 482,672

19 Claims. (Cl. 167—28)

This invention relates to new pesticidal compositions which contain a virgin heavy aromatic naphtha fraction, or an aromatic kerosene or light gas oil fraction, as an essential ingredient thereof. The invention also relates to the use of such compositions in killing houseflies and other insects.

The use of various aromatic petroleum oils as mild pesticides or insecticides is well known in the art, and their insecticidal activity has heretofore been ascribed essentially to their aromatic nature. For instance, methyl substituted naphthalenes have been recognized some years ago as valuable ingredients of insecticidal compositions. Furthermore, it has also been suggested that suitable fractions containing the desired active aromatic ingredients could be obtained from coal tar or especially by hydroforming or high temperature cracking of appropriate petroleum oils.

It has now been discovered, however, that virgin aromatic petroleum fractions boiling in the range of about 300° to 625° F., and especially between 450° or 460° and 535° F., and containing about 80 to 95 percent aromatics have insecticidal properties so unexpectedly superior to anything previously observed that a difference in kind is clearly involved. This difference is particularly surprising since the novel virgin material has proved greatly superior to seemingly similar fractions isolated from cracked, hydroformed or other non-virgin aromatic petroleum fractions which have been heretofore considered especially valuable in the insecticide art. While no definite explanation of this difference has been established, and it is certainly not intended to limit this invention to any particular theory, the astonishing hypothesis is nevertheless proposed herewith that perhaps the relatively small amount of the specific paraffinic or non-aromatic hydrocarbons present in the novel insecticidal compositions, or possibly a critically different structure of some specific aromatic compound or compounds present, exerts an entirely unexpected synergistic parasiticide effect in conjunction with the other aromatics normally present in non-virgin petroleum fractions of the same boiling range. Whatever this highly active virgin constituent may be, it seems that it is only too readily destroyed when a fraction containing it is subjected to such conventional conversions as thermal or catalytic cracking, reforming, hydroforming, etc.

In accordance with this invention the virgin aromatic fractions of the type described may be used as insecticides without the addition of other toxicants since, unlike previously known petroleum products, the present virgin fractions are not only outstanding paralytic or "knockdown" agents, but are in and by themselves also excellent killers or toxicants. However, where the insecticide is intended particularly for residual use, especially outstanding products can be formulated by blending the novel virgin aromatic fractions with a minor amount of supplemental killing agents such as DDT (dichlorodiphenyl-trichloroethane) or other conventional toxicants. Of course, insecticidal sprays formulated from

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the novel pesticidal compositions may also include relatively inert solvents such as deodorized kerosene and, where aerosols or pressurized sprays are wanted, also volatile propellants such as methyl chloride, trichlorofluoromethane, dichlorotetrafluoroethane, octafluoropropane and other low-melting, low-boiling halogenated C₁-C₃ alkanes; or they may be used as aqueous emulsions. Such pesticidal spray compositions are useful for household, industrial, livestock, and agricultural or horticultural applications. In general it is desirable that such spray compositions contain at least about 10 percent of the novel virgin aromatic fraction.

Especially effective virgin aromatic concentrates have been prepared from aromatic Texas Gulf crudes such as Tomball or Conroe crudes which generally contain in excess of 20 percent of aromatics and a sulfur content of well under 1 percent, usually under 0.05 percent. However, indications are that similarly useful materials can be obtained from any other crudes available, including paraffinic as well as naphthenic type crudes with comparatively minor variations in insecticidal activity from case to case. Of course, the yield of the desired virgin aromatic concentrate will differ considerably, depending on the aromaticity of the particular crude used. On the other hand, once a concentrate of proper aromatics content and boiling range is isolated, its specific origin seems to have only a comparatively minor effect on its insecticidal activity, though the product from the Tomball crude has shown particularly good results.

The desired aromatic concentrate can be prepared, for instance, by subjecting a virgin distillate fraction boiling in the range of about 220 to 625° F. to a conventional extraction with a suitable solvent, preferably sulfur dioxide. However, other known solvent systems such as phenol, ammonia, furfural-furfuraldehyde, dichloroethyl ether and the like may be used similarly, as long as a concentrate is produced which contains 80 to 95% aromatics, has an API gravity of about 17 to 22 and boils predominantly in the 400 to 535° F. range, i.e., it may have an initial boiling point between about 300 and 400° F., and a final boiling point between about 525 and 625° F. Accordingly, the distillate to be extracted may be a wide-cut virgin naphtha fraction, a kerosene fraction or a light virgin gas oil, or it may be a virgin fraction including heavy naphtha, kerosene and light gas oil constituents. The light ends, being predominantly non-aromatic, tend to be automatically segregated from the desired aromatic concentrate during the extraction.

EXAMPLE 1

As an example, a virgin distillate boiling between about 235° and 600° F. was separated from Tomball crude oil and extracted with sulfur dioxide in the usual manner. The resulting aromatic extract or concentrate was freed of solvent by distilling off sulfur dioxide and was purified further by treatment with caustic and blown bright with air, all of which is in itself well-known in the art. The properties of the resulting product (Extract A), being typical of the present invention, are summarized in Table I below.

Table I also lists the properties of a similar product (Extract B) which was obtained by sulfur dioxide extraction of a distillate from sour West Texas crude.

In order to compare the insecticidal effectiveness of extracts A and B described above, each of the extracts was diluted to 50% strength by mixing with deodorized kerosene of the type conventionally used as a base for insecticidal compositions. Such kerosene is a neutral, inert white oil which usually consists essentially of alkylated cycloparaffins and a small amount of paraffins. It is commonly made by the action of fuming sulfuric acid on a kerosene distillate fraction at about 90 to 160° F.,

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Table I

PROPERTIES OF VIRGIN AROMATIC EXTRACTS

Property	Extract A	Extract B
Initial Boiling Point, ° F.....	328	320
50%, ° F.....	448	436
Final Boiling Point, ° F.....	540	532
Sp. gravity (@ 60° F.).....	0.9267	0.921
API gravity.....	20.9	-----
Kauri Butanol value.....	96	-----
Total Aromatics, Vol. Percent.....	85.5	83
Mixed Aniline Point, ° F.....	77	79.5
Color, Tag Robinson.....	17	20.75
Flash (P.M. cc.).....	150	146
Sulfur.....	-----	0.162
Bromine No.....	-----	2.88

followed by neutralization with soda, washing with water, and filtration through adsorbent clay or the like.

The 50% blends were then used in accordance with the Peet Grady method (1954 Blue Book, Soap and San. Chem., pp. 243-4) in a comparative test on houseflies. The results obtained are summarized in Table I-A.

Table I-A

COMPARATIVE ACTIVITY OF VIRGIN EXTRACTS

Type of Aromatic Oil (50% in deodorized kerosene)	Fly Knockdown (Percent) in--				
	2 min-utes	4 min-utes	6 min-utes	8 min-utes	10 min-utes
Extract A.....	25	54	85	93	96
Extract B.....	21	57	66	81	86

The data show that both extracts were unusually effective in their insecticidal activity, but extract A which was derived from the aromatic Texas Gulf crude was especially outstanding.

EXAMPLE 2

The virgin extract A described in Example 1 above was further tested on houseflies by the Peet Grady method, this time in 100% concentration. In a comparative set of tests the virgin extract was found to be extremely rapid in its action, much more so than a similar catalytic cracked aromatic fraction or a catalytic reformed aromatic fraction.

The catalytic cracked aromatic fraction had the following properties:

API gravity.....	22.0
Flash (O. cup).....°F.....	178
Pour point.....°F.....	-10
Aniline point.....°F.....	98.6
Total aromatics.....vol. percent.....	70
Init. B.P.....°F.....	390
50%.....°F.....	480
Final B.P.....°F.....	580

The catalytic reformed fraction had a total aromatics content of 93 vol. percent and an API gravity of 27.2.

The results of the bioassays run on the several fractions, in terms of percentage of houseflies knocked down after two minutes' exposure, are summarized in Table II.

Table II

COMPARATIVE KNOCKDOWN ACTIVITY OF CONCENTRATED OILS.

Type of aromatic oil:	Fly knockdown, percent
Virgin aromatic extract A (invention).....	83
Catalytic cracked fraction.....	55
Catalytic reformed fraction.....	28

The data clearly demonstrates the great insecticidal superiority of the virgin extract over the non-virgin ma-

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terials. Also, while a strict comparison between the results of Tables I and II is not justified due to the difference in atmospheric conditions as well as a difference in flies used in the two separate sets of tests, the data of Table II nevertheless indicates the much greater potency of the concentrated material as compared with the dilute one. However, the virgin material constitutes a valuable insecticide even at high dilutions.

EXAMPLE 3

In another test the fly knockdown activity of virgin extract A described above was compared to the Official Test Insecticide (Commercial Standard CS72-54, U.S. Department of Commerce) using the Peet Grady method. The extract was used in 100% strength. The strain of flies used here was more resistant than in Example 2. The respective fly knockdown percentages are given in Table III.

Table III

COMPARISON WITH OFFICIAL TEST INSECTICIDE

Type of Insecticide	Fly Knockdown			
	4 min.	6 min.	8 min.	10 min.
Virgin Aromatic Extract A.....	65	85	93	96
Official Test Insecticide.....	57	64	71	75

EXAMPLE 4

The aforementioned extract A has also proved to be remarkably effective in its kill of roaches (*Blatella germanica*). When used in 100% concentration, extract A resulted in a roach kill of 22% compared to 27% with the Official Test Insecticide (O.T.I.) using the Official Cockroach Spray Method of the Chemical Specialties Manufacturers Association at a dosage of 0.5 cc. (Proceedings Chem. Spec. Manuf. Assoc., May 1953, pp. 110-112). This represents a truly outstanding result since heretofore no other all-petroleum product came anywhere near to the expensive O.T.I. composition in its effectiveness as a roach killer.

EXAMPLE 5

The great insecticidal effectiveness of the virgin extract in dilute form is apparent from the results in Table IV. This table shows the comparative effectiveness of the three fractions used in Example 2, but in this case after being diluted to 12.5 percent with a conventional deodorized flyspray kerosene base.

Table IV

COMPARATIVE KNOCKDOWN ACTIVITY OF DILUTE OILS

Type of Aromatic Oil (12.5% in kerosene)	Fly Knockdown				
	2 min.	4 min.	6 min.	8 min.	10 min.
Virgin Aromatic Extract A.....	24	50	66	71	77
Catalytic Cracked Fraction.....	19	33	46	48	56
Catalytic Reformed Fraction.....	17	30	32	32	35

It is particularly significant to observe that the superiority of the dilute virgin aromatic extract solution became more pronounced at the more prolonged exposures at which the other aromatic oils showed no incremental effect. This continued increase in activity with time indicates the great inherent potency of the virgin extract.

By virtue of its aromaticity the virgin aromatic extract acts as a solvent for various insecticidal materials such as the ones listed in Table V. Consequently, these are especially useful in conjunction with the virgin aromatic extract.

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Table V

SOLUBILITY OF VARIOUS TOXICANTS IN VIRGIN
AROMATIC EXTRACT

Toxicant	Solubility (percent) at —	
	10° F.	70° F.
DDT	30	35
Lindane (Gamma isomer of benzene hexachloride of 99+-% purity)	7	20
Benzene Hexachloride	20	25+
Methoxychlor (1,1,1-trichloro-2,2-bis (p-methoxy- phenyl) ethane)	25	40
Pentachlorophenol	10	17
Chlordane (1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a- hexahydro-4,7-methanoindane and related com- pounds)	75	75+
Toxaphene (chlorinated camphene having a chlorine content of 67 to 69%)		75
2,4-D, isopropyl ester (isopropyl ester of dichloro- phenoxyacetic acid)	60	60+
2,4-D, N-capryl ester (N-capryl ester of dichloro- phenoxyacetic acid)	60	60+
2,4,5-T, N-capryl ester (N-capryl ester of trichloro- phenoxyacetic acid)	50	60+

Other toxicants and synergists suitable for use in conjunction with the virgin aromatic extracts include pyrethrins, allethrin, cyclothrin, insecticidal thiocyanates, piperonyl butoxide, Sulfoxide (n-octyl sulfoxide of isosafrole and related compounds), Octacide (n-octylbicycloheptene), Strobane (polychlorides of camphene, pinene and related terpenes), Perthane (diethyl-diphenyl dichloroethane), Dieldrin (85% hexachloroepoxyoctahydro-dimethanonaphthalene and 15% related compounds), Heptachlor (1 or 3a,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene), Malathion (O,O-dimethyl di-thiophosphate of diethyl mercaptosuccinate), etc.

Depending on the specific agents used, such toxicants and synergists, or various combinations thereof, may be included in the novel compositions in concentrations which may range from about 0.025 to 30 weight percent, e.g. about 0.05 to 8%. For instance, pyrethrins, allethrins and the like are generally used in concentrations of 0.025 to about 0.5%, piperonyl butoxide and the like in the range of about 0.2 to 2%, thiocyanates in the range of about 0.5 to 3%, Strobane, Perthane and the like in the range of about 0.2 to 8%, and so forth. It will be understood that suitable concentrations are readily determined by those skilled in the art and that the foregoing figures have been listed here primarily for purposes of illustration rather than limitation.

EXAMPLE 6

Aerosols, which normally contain about 80 to 90 percent volatile propellant and 20 to 10 percent of non-volatile ingredients, represent another valuable embodiment of the invention. Such an aerosol is illustrated by the following composition.

	Weight percent
Virgin aromatic extract A (same as in previous examples)	5.00
Pyrethrins	0.25
Piperonyl butoxide	1.00
DDT	2.00
Deodorized kerosene base	6.75
Methylene chloride	21.25
Trifluoro-monochloromethane	21.25
Difluoro-dichloromethane	42.50

This composition was tested using the C.S.M.A. Official Aerosol Test Method for Flying Insects (Proceedings, Chem. Specialties Manuf. Assoc., 1953, pp. 50-53), and compared to the same formulation in which the aromatic fraction was replaced with deodorized kerosene. The data are summarized in Table VI.

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Table VI

AEROSOL TEST

Aerosol Composition	Flying Insect Knockdown, percent		
	5 min.	10 min.	15 min.
With Virgin Aromatic Extract A	21	40	55
Without Virgin Aromatic Extract A	7	15	25

EXAMPLE 7

While aromatic extracts of the type illustrated above constitute very superior insecticidal materials, particularly outstanding results are obtained when only the higher boiling fractions of these extracts, i.e. particularly those boiling above about 460°, or especially above 470° F. and below 535° F., are used.

To illustrate this, the virgin extract A described above was vacuum distilled and the higher boiling fraction representing approximately the 60 to 95 vol. percent portion was segregated for further evaluation. This fraction is hereafter designated as Fraction AA. While the uppermost 5% were also highly active they tended to contain some heavy material which had a tendency to cause unwanted stains and were therefore excluded.

Fraction AA, representing 35 vol. percent of the original virgin aromatic product, had the following characteristics:

Initial boiling point	°F	464
Final boiling point	°F	532
Aromatics	volume percent	90

After dilution to a 20% concentration by blending with deodorized kerosene, the narrow cut aromatic fraction AA was tested by the Peet Grady method against a similar dilution of the extract A.

The bioassays of the two 20% blends are summarized in Table VII.

Table VII

Active Ingredient (in 20% concentration)	Fly Knockdown percent				
	2 min.	4 min.	6 min.	8 min.	10 min.
Aromatic Extract A	16	27	40	50	61
Higher Boiling Fraction AA	31	54	68	76	87

The materially greater effectiveness of the narrow-cut, high boiling fraction AA is manifest.

The 464-532° F. fraction AA, in 12.5% dilution in kerosene, was also tested against similar dilutions of other fractions of the same SO₂ extract. The Peet Grady test data are summarized in Table VIII.

Table VIII

ACTIVITY ACCORDING TO BOILING RANGE

Boiling Range of Active Fraction	Fly Knockdown, Percent			
	2 min-utes	4 min-utes	6 min-utes	10 min-utes
Fraction AA (464-532° F.)	15	29	39	48
500-550	12	20	33	44
550-600	10	19	26	39
600-625	10	14	15	24

The data, particularly in conjunction with those of Table VII, indicate that the most active components are present in the fraction boiling between about 450 to 550° F., or especially in the fraction boiling above about 460 and below 500° F. Conversely, while the material boil-

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ing above 600° F. is active, it is quite distinctly less so than the material boiling below 600° F.

Another interesting comparison is shown in Table IX which summarizes data obtained, respectively, with fraction AA and with a catalytic hydroformed oil, each oil being used in 12.5% concentration in deodorized kerosene. The catalytic hydroformed oil had a boiling range of 476 to 694° F. and a total aromatics content of 99 vol. percent.

Table IX

COMPARISON OF VIRGIN AND CATALYTIC OILS

Type of Oil	Fly Knockdown, Percent			
	2 min-utes	4 min-utes	6 min-utes	10 min-utes
Fraction AA.....	23	36	49	64
Hydroformed Fraction.....	9	20	28	42

The superiority of the virgin product over the catalytic one is again readily apparent. Tested undiluted against the Official Test Insecticide, the higher boiling aromatic fraction AA produced a knockdown of 100% compared to 78% for the O.T.I. and a kill of 99% compared to 57% for the O.T.I. Thus the narrow-cut, heavy aromatic fraction by itself appears to far surpass the requirements for a Grade AA Liquid Insecticide (CCS 72-54, U.S. Dept. Com.) which requires a knockdown of not less than 2 percentage points and a kill of +16 percentage points compared to the Official Test Insecticide. The kill of this pure petroleum product is particularly astounding, as those skilled in the art will readily acknowledge; and this, combined with the outstanding knockdown activity, makes the aforementioned narrow-cut fraction a truly superlative insecticide.

The higher boiling aromatic fraction AA was also unusually effective against roaches. Using the Official Roach Spray Method of the C.S.M.A., a kill of 97% was obtained compared to 100% with the O.T.I. Using the same method, the product was effective against other species of roaches, producing an 88% kill of male American roaches (*Periplaneta americana*) and a 100% kill of male oriental roaches (*Blatta orientalis*). Since roaches are notoriously difficult to kill, the fact that the aromatic fraction AA substantially matches the excellent results obtained with the expensive O.T.I. composition represents convincing evidence of the excellence of the present invention.

The effectiveness of the aromatic fraction in a general purpose household insecticide was determined in the following formulation:

NEW FORMULA

	Weight percent
DDT	3.0
Lindane	0.1
Thanite	0.5
Deodorized kerosene	71.4
Aromatic fraction AA	25.0

This formulation was compared with the following conventional commercial formulation:

OLD FORMULA

	Weight percent
Allethrin	0.06
Lindane	0.10
Piperonyl butoxide	0.20
Thanite	0.49
Lethane 384 Special ¹	0.60
Deodorized kerosene	98.55

¹b-Thiocycanoethyl esters of mixed fatty acids averaging 10 to 18 carbon atoms (75%) and b-butoxyl-b'-thiocycano-diethyl ether (25%), diluted with an equal volume of deodorized kerosene.

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Results of the tests are shown in Table X.

Table X

Formulations	Fly Knockdown, Percent				
	2 min-utes	4 min-utes	6 min-utes	8 min-utes	10 min-utes
Invention.....	46	66	77	92	96
Old Formula.....	45	63	77	86	93

These data indicate that the aromatic fraction can replace expensive knockdown agents such as allethrin, piperonyl butoxide and Lethane 384 Special. In fact a "Grade AA" household insecticide with residual effect can be prepared as follows:

	Weight percent
DDT	5
Aromatic fraction AA	13
Base oil	82

The aromatic fraction is also applicable for use in pressurized formulations. For instance, an excellent roach aerosol spray can be prepared as follows:

FORMULA Y		Weight percent
Aromatic fraction AA		25
Chlordane		2
Base oil		68
Dichloro-difluoro methane		25

A pressurized moth spray may be prepared as follows:

FORMULA Z		Weight percent
Aromatic fraction AA		25
DDT		5
Base oil		50
Dichloro-difluoro methane		30

The aromatic fraction also possesses insecticide action against pests affecting crops. It may be applied as a fog when used in a fog generator. More permanent insecticide formulations preferably include compounding of the aromatic fraction with other toxicants such as DDT, methoxychlor, Toxaphene, benzene hexachloride, aldrin, Parathion, and similar substances. As is apparent from the formulas shown in Example 6 and in Formula W below, DDT for instance may constitute about 2 to 25% of the novel compositions.

The aromatic fraction can also be applied in the form of an emulsion. A concentrate can be formulated consisting of the aromatic fraction and a conventional emulsifying agent, such as alkyl lauryl polyethylene alcohol, alkyl polyoxyethylene glycol ester, and polyoxyethylene sorbitol oleate. This is added to water and applied to the crops or to livestock by means of conventional spray equipment. Residual action may be obtained by combining the aromatic fraction with a toxicant such as those indicated above and a suitable emulsifying agent. This type of concentrate could consist of the following materials:

FORMULA W		Weight percent
DDT		25
Polyoxyethylene sorbitol oleate		5
Aromatic fraction AA		70

Unless otherwise indicated, all proportions and percentages of materials have been expressed herein on a weight basis.

Having described the nature of the invention and illustrated it by examples, its scope is particularly pointed out in the appended claims. Referring to these claims, it will be understood that their recital of the expression "consisting essentially of" leaves such claims open to the in-

clusion of unspecified materials such as diluents, propellants, auxiliary toxicants or synergists which do not affect the basic character of the composition claimed.

What is claimed is:

1. A pesticidal concentrate consisting essentially of a highly aromatic extract of a virgin distillate of a Texas Gulf crude oil, said extract boiling in the range of about 400° to 535° F. and having a total aromatics content of 80 to 95 volume percent.

2. A pesticidal composition the active ingredient of which consists essentially of a highly aromatic sulfur dioxide extract of a virgin distillate of Tomball crude oil, said virgin extract having a boiling range of about 450° to 535° F. and a total aromatics content of about 80 to 95 volume percent.

3. A pesticidal spray composition consisting essentially of a highly aromatic extract of a Texas Gulf virgin petroleum distillate in combination with a minor amount of a chemical toxicant, said aromatic extract boiling predominantly in the range of about 400° to 535° F. and having a total aromatics content of 80 to 95 volume percent.

4. A pesticidal spray composition according to claim 3 wherein the aromatic extract is derived from Tomball crude and has a boiling range of about 450 to 535° F.

5. A pesticidal aerosol composition consisting essentially of a highly aromatic extract of a virgin Texas Gulf petroleum distillate in combination with a major amount of a liquefied halogenated C₁-C₃ alkane propellant and a minor amount of a chemical toxicant, said extract boiling predominantly in the range of about 400° to 535° F. and having an aromatics content of 80 to 95 volume percent.

6. A pressurized pesticide spray composition consisting essentially of a highly aromatic sulfur dioxide extract of a virgin Tomball crude distillate in combination with a minor amount of a chemical toxicant, a refined essentially inert kerosene base oil, and sufficient liquefied gas to produce a suitable spray pattern, said extract having a boiling range predominantly between about 450° to 535° F. and a total aromatics content of 80 to 95 volume percent.

7. A pesticidal emulsion concentrate consisting essentially of a highly aromatic extract of a virgin Texas Gulf distillate in combination with a minor amount of an emulsifying agent, said extract boiling predominantly in the range of about 400° to 535° F.

8. A pesticidal concentrate according to claim 7 wherein the extract is derived from Tomball crude and has a boiling range of about 460 to 535° F.

9. A pesticide emulsion concentrate according to claim 8, in further combination with a minor amount of a chemical toxicant.

10. A pesticidal fog concentrate consisting essentially of a sulfur dioxide extract of a virgin Texas Gulf distillate in combination with a minor amount of a chlorinated aromatic hydrocarbon toxicant, said extract having a boiling range of about 460° to 535° F. and a total aromatics content of 80 to 95 volume percent.

11. An insecticidal composition consisting of 10 to 30 percent of a sulfur dioxide extract of a virgin Texas Gulf distillate, 90 to 70 percent of a refined essentially inert kerosene base oil, and 0 to 25 percent of a chlorinated aromatic hydrocarbon toxicant, said extract having a boiling range of about 460° to 535° F. and a total aromatics content of about 85 to 95 volume percent.

12. An insecticidal composition according to claim 11 wherein the chlorinated toxicant is dichlorodiphenyl trichloroethane present in a concentration of from 2 to 25 percent.

13. A process for killing insects which comprises applying to such insects an aromatic extract of a virgin petroleum distillate, said extract being derived from Texas Gulf crude oil and boiling in the range of about 400° to 535° F. and containing 80 to 95 volume percent of aromatics.

14. A process according to claim 13 wherein the extract is a sulfur dioxide extract derived from Tomball crude oil and having a boiling range predominantly between about 460° and 535° F.

15. A process according to claim 14 wherein the extract is used in combination with a minor amount of a chlorinated aromatic hydrocarbon toxicant.

16. A process of killing insects which comprises applying to such insects an insecticide consisting of an aromatic sulfur dioxide extract of a virgin distillate of a Tomball crude oil, said extract having a boiling range of about 460 to 535° F. and a total aromatics content of 85 to 95 volume percent.

17. A process according to claim 16 wherein the insects are houseflies.

18. A process according to claim 16 wherein the insects are roaches.

19. An enclosure containing a pesticidal aerosol composition consisting essentially of a highly aromatic extract of a virgin distillate of Tomball crude oil in combination with a major amount of a liquefied halogenated C₁-C₃ alkane propellant and a minor amount of an extraneous chemical toxicant, said extract boiling predominantly in the range of about 450° to 535° F. and having an aromatics content of 80 to 95 volume percent.

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