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Relationship Between Chemical Structure and Toxic Action on Rats

by

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RELATIONSHIP BETWEEN CHEMICAL STRUCTURE AND RAT REPELLENCY

by

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RELATIONSHIP BETWEEN CHEMICAL STRUCTURE AND TOXIC ACTION ON RATS*

INTRODUCTION

Although a very large number of materials have been tested or used as "rodenticides," relatively few have proved successful for this purpose. The reasons which may be advanced for the failure of the majority of the proposed toxicants are synonymous with the failure to meet one or more of the prime requirements of a rodenticide. These requirements are: adequate toxicity, acceptability sufficient to insure that the rodents will readily ingest lethal quantities, stability, and, possibly, specificity, in that the toxicant would be lethal to rodents, and relatively innocuous to other species. Of the materials which have failed as rodenticides, some may possess an objectionable taste or odor which may cause virtually complete rejection of the poisoned baits; others may produce physiological reactions before a lethal dose has been ingested, causing the animal to avoid further contact with the toxic substance. Still other materials may volatilize or be hydrolyzed before being ingested; and some, such as the well-known ANTU (α-naphthylthiourea), may be quite effective against one or more species of rodents but relatively ineffective against other species. Or, with some compounds, the hazards to other forms of animal life may be too great to permit wide-spread or general use of the toxicants.

In an attempt to discover more effective, safer, or more specific rodenticides, the Fish and Wildlife Service has carried on a program of testing various chemicals and plant products. The work was greatly accelerated during World War II, when sources of supply of some of the rodenticides, such as thallium, strychnine, and red squill were curtailed or cut off entirely. In all, data on the toxicity to rodents of approximately 1,000 chemical compounds and plant extracts have been obtained in the course of these studies. The candidate materials were synthesized in the laboratories of the Fish and Wildlife Service, purchased from chemical supply houses, or were obtained from cooperating industrial concerns or other Government agencies.**

EXPERIMENTAL METHODS

The animals used in these studies were albino and hooded laboratory rats weighing between 130 and 200 grams. As a general rule, all rats to be used in an experiment on any one day were denied access to food during the preceding night. Following administration of the test material either by intraperitoneal injection or by stomach tubing, the animals were returned to individual cages and furnished food and water ad libitum. Records were kept of the time required to kill, and any survivors were held for a period of one week (or two weeks in the case of arsenic compounds).

The majority of the chemical compounds tested were administered as aqueous solutions or suspensions in 2% gum acacia solutions although, with some compounds whose stability in water was questionable, propylene glycol was used as a solvent. Compounds with minimum lethal dose (M.L.D.) of 250 mg/kg, or less, were forwarded to the Denver Laboratories of the Fish and Wildlife Service for acceptance tests. These consisted of incorporating a suitable amount of the toxic substance in a standard bait preparation which was then offered to caged laboratory rats in one or both of two ways. In the first method, definite doses were offered to individual test animals, and tentative LD (lethal dose) figures were obtained.

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In the second procedure, surplus quantities of the prepared baits were offered to a rather large series of individual rats and the acceptabilities of the formulations were determined by weighing back the uneaten portions, after any overnight exposure periods. The percentage of kills obtained indicated the effectiveness of each poison as a candidate rodenticide.

RESULTS

The toxicities of the chemical compounds are summarized in Table I. In some cases, no kills were obtained at the highest dosage level employed, and the figures given indicate that the minimum lethal dose is above this value. The letters "IP" preceding a value for the M.L.D. indicate that the administration was by intraperitoneal injection; all other values were obtained by stomach tube administration. Figures for both types of administration are cited where they are available.

The compounds are classified according to the various functional groups present. As a result, many compounds appear more than once, being listed under each category represented in the compound. The main headings are arranged alphabetically and further breakdown is made according to additional substituent groups. In classifications containing large numbers of compounds, mono-substituted materials are separated from those containing two or more additional substituents. In cases where the number of compounds of a single type is sufficient to warrant such a division, the compounds are grouped according to the type of substituent present. Nomenclature of compounds is according to the method employed by Chemical Abstracts.

DISCUSSION

The interpretation of the data in the tables is complicated by the fact that the values for the lethal doses of some materials were determined by intraperitoneal injection, while others were determined by oral administration (stomach tubing). In many cases, widely divergent results were obtained when the same compound was tested by both technics. For example, the M.L.D. for 3-chloro-1,2-propanediol, as determined orally, was found to be 250 mg/kg, while the value for IP injection was 1.0 mg/kg. Since the toxicities indicated by IP injection are frequently higher than those found by oral administration, it would seem that the results obtained by this technic may not offer a reliable index to the rodenticidal activity of materials to be administered orally in baits. For this reason, most materials were tested by stomach tubing, and further discussion of the toxicity of the test materials will be limited to the results of oral administration.

In considering the chemical compounds, no attempt will be made to discuss every material or class of compounds. Only those compounds and groups among which interesting facts, correlations, possible mechanisms of physiological activity, and suggested sources for other toxic materials are apparent will be considered. It must be remembered that the purpose of these studies during the war years was to locate new poisons in a limited period of time. For this reason a purely empirical approach was maintained throughout. Lack of extensive facilities and personnel, as well as time, prevented completion of series of compounds for the elucidation of relations between toxicity and chemical structure, or forwork on the mechanisms of physiological reactions and the pharmacology of the compounds screened.

Despite the scarcity of data resulting from inadequate sampling in many series of compounds, it is possible to point out some relationships between toxicity and chemical composition. First, since relatively few unsubstituted acids, amides, esters, alcohols, etc., are highly toxic, it may be assumed that the primary functional groups involved are not in themselves toxic, and that the lethal properties of the substituted members of these series are due to the presence of certain substituent groups or to spatial relationships within the molecule. Some of these relationships may be brought out in a discussion of the more important materials offering promise as rodenticides.

Fluorinated Compounds

The salts, esters, and amides of fluorinated fatty acids constitute a series of highly toxic compounds. Interest in this series had its origin in the discovery of the rodenticidal activity of the sodium salt of monofluoroacetic acid, now known as "1080." Other metallic salts of this acid, salts of γ-fluorobutyric acid, γ-fluoro-β-hydroxybutyric acid, γ-fluorocrotonic acid, fluoroethanol, some fluoroamides, and esters of fluorinated acids, also exhibit high degrees of oral toxicity.

The toxicity of the four-carbon fluorinated fatty acids is of particular interest from a theoretical viewpoint. Presumably, each of these acids might be oxidized in vivo to yield one mol of fluoroacetic acid, according to the system: (1)

$$CH_2FCH_2CH_2COOH \rightleftharpoons CH_2FCHOHCH_2COOH \rightleftharpoons CH_2FCH{:}CHCOOH \rightarrow CH_2FCOOH + CH_3COOH$$

However, this mechanism fails to explain why the hydroxy acid and the unsaturated acid are more toxic, in terms of both milligrams per kilogram and mols per kilogram, than either γ-fluorobutyric acid or monofluoroacetic acid. It appears possible that both the hydroxy group and the unsaturated linkage on the adjacent carbon atom may increase the toxicity of the CH_2F- group.

Acceptance tests and field trials have revealed that sodium fluoroacetate is an acceptable and effective poison of this series of compounds. The methyl esters are too volatile to be effective rodenticides, and other salts of fluoroacetic acid do not appear to offer any advantages as to acceptance and effectiveness over the sodium salt. One of the disadvantages connected with the use of sodium fluoroacetate, however, is the extremely rapid rate of absorption in the animal body, a characteristic of this poison which limits the effective use of emetics to a very few minutes in the case of accidental poisoning of man or beneficial animals. It is believed that this rapid rate of absorption is associated with the high solubility of the salt in water. Consequently, an attempt was made to find a derivative of fluoroacetic acid with a lower solubility. These derivatives included the aluminum, copper, mercury, calcium, magnesium and thallium salts, α-fluoroacetanilide and α-fluoro-p-phenylacetanilide. The metallic salts were too soluble to cause a significant decrease in the rate of absorption, and although fluoroacetanilide is soluble to the extent of only 0.5%, its rate of reaction is not much different from that of sodium fluoroacetate. On the other hand, α-fluoro-p-phenylacetanilide is much less soluble, and appears to have a noticeably slower reaction rate in the animal.

Arsenic Compounds

The oral toxicities of several of the pentavalent arsenic compounds are sufficiently high to indicate that compounds of this series might be worthy of further consideration as rodenticides. It can be seen from the table that the most toxic of these compounds are found among the derivatives of xylene-, 2-biphenyl-, toluene-, and monochlorophenyl arsenic acids, which have M.L.D.'s ranging from 5 to 50 mg/kg. Although a completely parallel comparison does not occur, it is interesting to note that the substituents of benzenearsonic acids which produce the highest degree of toxicity are also those which may be introduced into phenylthiourea to produce the more toxic members of this series. The lethal action of the arsonic acids is slow; a good proportion of rats receiving lethal doses survive a week or more.

The 2,4- and 2,5-xylenearsonic acids are probably the most toxic members of this group. Since the 2,4- and 2,5-xylidenes from which these two compounds are prepared are costly, an effort was made to find a cheaper starting material. Accordingly, an arsonic acid (1772 and 1773) was prepared from a technical grade of xylidene which contains a mixture of several of the six isomeric xylidenes, and of course is considerably cheaper than the purified materials. This arsonic acid was also highly toxic.

It has been known for a long time that pentavalent arsenic compounds of the arsonic acid type undergo reduction within the animal body to trivalent arsenic compounds, and it has been pointed out that the essential mechanism for the toxic action of arsenicals in the trivalent form is largely the binding of essential thiol groups of enzyme proteins (2). This appears to illustrate a basic mechanism of the action of certain drugs and toxic agents, namely the inhibition of certain enzyme systems by blocking the essential thiol groups of the enzyme protein involved in these systems.

Phosphorus Compounds

Although many of the phosphorus compounds do not appear sufficiently toxic to warrant further consideration as rodenticides, the alkyl esters of some of the poly-phosphoric acids may offer definite promise in this field. These compounds are highly toxic both as oral and contact poisons, but hydrolyze to relatively non-toxic materials when exposed to water or atmospheric moisture. This tendency toward hydrolytic decomposition has both disadvantages and advantages. Since the poisoned baits would lose all toxic properties within a relatively short period, immediate acceptance would be required for the poison to be effective. However, it would appear to be unnecessary to collect any residues in order to reduce hazard to other species of animal life. Also, since it appears improbable that the compounds would not be decomposed in the animal body, there should be little danger of secondary poisoning resulting from the ingestion by pets of the carcasses of rodents killed by the use of these compounds.

In considering these compounds, it must be borne in mind that the purity of the samples tested, and even the identity of the materials, may be open to question (3). Also, although the test solutions were administered to the rats within a short time after preparation, some hydrolysis may have already occurred. It is quite possible that the toxicities of highly purified materials would be appreciably higher than those reported.

For the purposes of this discussion, the hexa-alkyl tetraphosphates will be considered as impure samples of the corresponding tetra-alkyl pyrophosphates (3). It may be seen that the toxicities of the tetraphosphates parallel those of the pyro-phosphate esters, and that in each case, the ethyl ester is more toxic than the methyl or the higher homologs. The values reported are for aqueous solutions, but further work has shown that the use of propylene glycol as a solvent retards hydrolysis and that the apparent toxicity of glycol solutions is much higher than that of aqueous solutions of the same sample.

A number of samples of tetraethyl pryophosphate have been examined, and the M.L.D.'s have ranged from a low of 0.7 mg/kg to approximately 7 mg/kg. Acceptance of treated baits or aqueous solutions has been poor, and in many cases the rats refused to eat the treated food during the first 48 hours after preparation. After this period, the food was accepted readily, but no kills resulted. It may be assumed, therefore, that the compound completely hydrolyzed during the 48-hour period. The samples of tetramethyl pyrophosphate had relatively low toxicity, but may have been impure, or may have decomposed before the tests were made. Tetraisopropyl pyrophosphate appears more toxic than the n-propyl compound, but again this may have been due to different states of purity of the sample.

A relatively stable organic phosphorus compound, diethyl p-nitrophenyl thionophosphate, like TEPP in use as an insecticide, is also highly toxic to rodents. It, like TEPP, has extremely low initial acceptance.

Thiosemicarbazides and Derivatives

Although many members of this series are poorly accepted by laboratory rats, some compounds are sufficiently toxic to offer some degree of promise in rodent control. Thiosemicarbazide itself is highly toxic and produces a fair percentage of kills in feeding tests with laboratory rats. Substitution within the molecule causes a reduction in activity -- the M.L.D. for 3-thiosemicarbazide is 15 mg/kg, that for

4-phenyl-3-thiosemicarbazide is 50 mg/kg, that for 3-thio-4-p-tolylsemicarbazide is 250 mg/kg. The effect on toxicity exerted by the position of the substituent group is illustrated in the case of the 1-phenyl and 4-phenylthiosemicarbazides, where the M.L.D. for the first compound was found to be 400 mg/kg, while that for the other was found to be 50 mg/kg. It should be noted that in the 1-phenyl compound the substituent is on the chemically reactive end of the molecule, and that a substituent in the 4-position has little effect on the material's chemical reactivity.

A number of aldehyde and ketone thiosemicarbazones have been tested with a view toward determining the effects of reactants on the toxicity of the parent thiosemicarbazide. It was found that the 3-thiosemicarbazones of acetone and acetophenone have toxicities approximately equal to that of the thiosemicarbazide, while the aldehyde thiosemicarbazones appear to be less toxic. Also, the 4-phenylthiosemicarbazones are considerably less toxic than the corresponding unsubstituted thiosemicarbazones.

Thioureas

The discovery of the high toxicity and effectiveness as a rodenticide of 1-(α-naphthyl)-2-thiourea (ANTU) by C. P. Richter at Johns Hopkins University led to the study of other members of this series. In addition to ANTU, the most toxic members of this series include the tolyl-, monochlorophenyl-, xylyl-, and the 2-biphenylyl- derivatives. Substitution on both nitrogen atoms of the parent thiourea, e.g., thiocarbanilide, failed to give toxic compounds. With the exception of ANTU, none of the highly toxic thioureas have been found to be effective rodenticides, largely because of their poor acceptance in baits. It is believed that this poor acceptance is due to the presence of small amounts of the amines from which the thioureas are prepared. Other factors leading to the ineffectiveness of thioureas as rodenticides are: (1) a lower toxicity for young rats than for adults, (2) the tolerance which rats develop to sublethal doses, and, especially in the case of ANTU, (3) the large variation in toxicity to different species of rats.

The position of a substituent group exercises a marked effect upon the toxicity of members of this series. The 1-o-tolyl- and the 1-p-tolylthioureas were found to have M.L.D.'s of 5 mg/kg, while the value for the meta isomer was 50 mg/kg. Similar differences were found in the three chlorophenyl thioureas, where the values for the o- and p- chlorophenyl thioureas were 15 mg/kg, and that for the meta isomer was 250 mg/kg. With two series of ether-substituted thioureas, the p-anisyl and p-phenethyl compounds were more toxic than the ortho isomers.

Selenium Compounds

The mechanism of toxicity of the selenium compounds is generally conceded to be the replacement of sulfur by selenium in the animal body constituents. Since this replacement is gradual, selenium poisoning is usually chronic in nature. However, many selenium compounds show high acute toxicity as well. Again, the effectiveness of these compounds as rodenticides is handicapped by poor acceptance.

Other Highly Toxic Materials

Among the other chemical groups which possess toxic members are the alkaloids, chlorinated aliphatic amines, and metallic compounds such as the thallium and mercury salts. The structure of alkaloids may or may not be a clue to their toxic action -- too little is known about them for any conclusions to be formed. For the most part, the toxicity mechanism seems to be a paralysis of some part of the nervous system. The polychlorinated aliphatic amines are powerful vesicants, and their oral toxicity is no doubt due to the liberation of HCl upon hydrolysis. Thallium and mercury salts are quite generally toxic, and like selenium and thiourea compounds mentioned above, many derivatives are distasteful to rats.

SUMMARY

Although the compounds described herein represent only a small fraction of the possible toxicants in the chemical field, enough data have been collected to disclose a relationship between chemical composition and rodenticidal activity. For a more thorough evaluation of structural effect on toxicity, an exhaustive study of the metabolism of chemicals would be necessary. Until such a program becomes feasible, the screening of candidate 'rodenticides' will be continued along the lines of previous and current experiments.

Acknowledgement

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TOXICITY OF COMPOUNDS TO RATS

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	ACID ANHYDRIDES	
1457	7-Oxabicyclo[2.2.1]-5-heptene-2,3-dicarboxylic anhydride	250
	ACIDS, CARBOXYLIC	
	Unsubstituted	
	Monobasic	
1629	Acetic acid, phenyl-	> 500
939	Cinnamic acid	> 500
1701	1-Naphthaleneacetic acid	> 500
	Polybasic	
935	Adipic acid	> 500
1649	Homophthalic acid	> 500
1247	Malonic acid, benzylidene-	> 500
	Monosubstituted	
	Amines	
1771	Acetic acid, (p-aminophenyl)-	> 500
1205	Anthranilic acid	> 500
1707	Isobutyric acid, β,β'-bis(dimethylamino)-	> 500
	Ethers	
933	Anisic acid	> 500
1666	Benzoic acid, o-(carboxymethoxy)-	> 500
1051	o-Veratric acid	> 500
	Halides	
1734	Acetic acid, fluoro-, aluminum salt	10
1430	calcium salt	2
1735	copper(II) salt	10
1432	magnesium salt	2
1736	mercury(II) salt	10
1080	sodium salt	5
1737	thallium(I) salt	10
1658	-----, iodo-, potassium salt	> 500
934	Benzoic acid, o-bromo-	> 500
937	-----, o-chloro-	> 500
938	-----, p-chloro-	> 500
1327	Butyric acid, γ-fluoro-, sodium salt	5
1409	Crotonic acid, γ-fluoro-, sodium salt	2
1283	Propionic acid, pentachloro-	> 500
1480	m-Toluic acid, α,α,α-trifluoro-, thallium(I) salt	50
	Heterocyclic Compounds	
936	Coumarilic acid	> 500
1702	3-Indoleacetic acid	> 500
1703	3-Indolebutyric acid	> 500
1669	2,3-Pyrazinedicarboxylic acid	> 500
	Nitriles	
1250	Cinnamic acid, α-cyano-	> 500
1628	o-Toluic acid, α-cyano-	> 500

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	ACIDS, CARBOXYLIC	
	Monosubstituted	
	Nitro Compounds	
1700	Acetic acid, (2,4-dinitrophenyl)-	> 500
1660	-----, (p-nitrophenyl)-	> 500
	Miscellaneous	
1280	Acetic acid, mercapto-	250
1532	-----, selenocyano-, potassium salt	100
1281	-----, thiodi-	> 500
850	barium salt	500
950	Anthranilic acid, N,N'-oxalyldi-	> 500
1044	Benzoic acid, o-thioureido-	> 500
265	Salicylic acid, lead(II) salt	IP > 500
1699	Succinic acid, dioxo-, phenylosazone	> 500
	Disubstituted	
	Ether-Halides	
986	Acetic acid, (p-chlorophenoxy)-	> 500
1309	-----, (2,4,6-triiodophenoxy)-	> 500
1308	sodium salt	> 500
	Halide-Phenols	
1322	Benzoic acid, 4-hydroxy-3,5-diiodo-	> 500
1324	Salicylic acid, 3,5-diiodo-	500
	Heterocyclic-Ketones	
1710	1,2H-Benzopyran-3-carboxylic acid, 6-methyl-2-oxo-	75
1251	-----, 2-oxo-	> 500
1252	$\Delta^{1,\alpha}$-Phthalanacetic acid, 3-oxo-	> 500
	Miscellaneous	
1439	Acetic acid, (dihydro-1,3,2-dithiarsenol-2-ylmercapto)-	100
1318	-----, (2,5-dioxo-3-cyclohexen-1-ylmercapto)-	250
441	-----, (p-nitrophenylselenyl)-	IP 250
1206	Anthranilic acid, 5-bromo-	> 500
1310	Butyric acid, γ-fluoro-β-hydroxy-, sodium salt	1
948	Oxanilic acid, o-carboxy-, α-ethyl ester	500
1047	Phthalanilic acid, 3-chloro-	> 500
1286	Salicylic acid, fluoroacetate	10
183	-----, 5-amino-, hydrochloride	IP > 500
	Polysubstituted	
447	Acetanilide, 2-(acetoxymercuri)-4-nitro-	IP 500
1225	Gallocyanine	> 500
880	Pulvinic acid	1000
1210	Rhodamine B	500
	ALCOHOLS	
	Unsubstituted	
1633	Ethyl alcohol, thallium(I) deriv.	50

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	ALCOHOLS	
	Monosubstituted	
	Halides	
1204	Ethanol, 2-fluoro-	5
X5990	1,2-Propanediol, 3-chloro-	250, IP 10
996	-----, 3-chloro-2-methyl-	> 500
	Miscellaneous	
1090	Benzoin, oxime	> 500
1282	Ethanol, 2,2'-thiodi-	> 500
R1768	Glucose, thiosemicarbazone	> 500
1157	D-, thiosemicarbazone	> 500
1223	Oxalacetic acid, diethyl ester, sodium deriv.	> 500
1460	2,4-Pentanedione, dimethylthallium deriv.	> 500
1497	4-Pentyn-2-one, 5-hydroxy-	50
1347	1,2-Propanediol, 3-phenoxy-	> 500
	Disubstituted	
1315	Butyric acid, γ-fluoro-β-hydroxy-, methyl ester	1
1310	sodium salt	1
1440	10(5H)-Phenarsazineethanol, 10-sulfide	50
175	Piperonyloin	IP > 500
1647	2-Propanol, 1-fluoro-3-propylmercapto-	50
1693	p-Quinone, 2,5-dichloro-3,6-dihydroxy-	> 500
1362	Sorbitol, 3,5-bis(hydroxymethyl)-2,4-methylene-, D-, tetra-acetate	> 500
1078	Sulfonium compound, (thiodiethylene)bis[bis(2-hydroxyethyl) ----- chloride]	250
	ALDEHYDES	
X5997	Glyoxal	IP 100
	ALUMINUM COMPOUNDS	
1734	Acetic acid, fluoro-, aluminum salt	10
332	Carbamic acid, diethyldithio-, aluminum salt	IP > 500
379	-----, dimethyldithio-, aluminum salt	IP > 500
733	Nicotine, compound with 1/3 f. wt. aluminum picrate	200, IP 100
249	Phenol, p-nitro-, aluminum deriv.	IP 250
	AMIDES	
	Unsubstituted	
747	Acetanilide	IP > 500
748	o-Acetotoluidide	IP > 500
956	Benzamide	> 500
972	-----, N,N-dibenzyl-	> 500
974	-----, N,N-dicyclohexyl-	> 500
954	-----, N,N-diisobutyl-	> 500
979	-----, N,N-diphenyl-	> 500
953	-----, N-isobutyl-	> 500
952	-----, N-propyl-	> 500
977	Benzanilide, N-benzyl-	> 500
1032	Butyramide, α-phenyl-	> 500
1038	Butyranilide	> 500
1008	Carbazole, 9-benzoyl-	> 500

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	AMIDES	
	Unsubstituted	
955	Lauramide, N-butyl-	> 500
192	Oxamide	IP > 500
973	Piperazine, 1,4-dibenzoyl-	500
	Monosubstituted	
	Ethers	
1167	Acetamide, α-(2-butenyloxy)-N-cyclohexyl-	> 500
1059	-----, α-butoxy-N-cyclohexyl-	> 1000
975	p-Benzophenetidide	> 500
1052	o-Veratramide	> 500
	Halides	
1531	Acetamide, N,N-diethyl-α-fluoro-	25
1061	Acetanilide, p-bromo-	> 500
X5991	-----, α-fluoro-	3
X5992	-----, α-fluoro-p-phenyl-	10
960	Benzanilide, 2'-bromo-	> 500
970	-----, 3'-bromo-	> 500
971	-----, 4'-bromo-	> 500
957	-----, 2'-chloro-	> 500
958	-----, 3'-chloro-	> 500
959	-----, 4'-chloro-	> 500
976	-----, 2',5'-dichloro-	> 500
	Nitro Compounds	
746	Acetanilide, p-nitro-	IP 500
1269	p-Acetotoluidide, 2,3(and 2,5)-dinitro-	> 500
1006	Benzanilide, 3'-nitro-	> 500
	Selenium Compounds	
702	Acetanilide, α,α'-diselenobis-	50, IP 25
668, 878	o-Acetotoluidide, α,α'-diselenobis-	IP 25, 25
454	12H-Benzo[b]phenazelenazine, 12-acetyl-	IP > 500
1127, 626	Selenocyanic acid, ester with α-hydroxyacetanilide	IP 25, 25
868, 627	ester with α-hydroxy-o-hydroxy-o-acetotoluide	100, IP 100
	Miscellaneous	
1676	Acetoacetanilide	> 500
950	Anthranilic acid, N,N'-oxalyldi-	> 500
191	Benzamide, o-cyano-	IP > 500
1007	Benzoic acid, p-benzamido-, ethyl ester	500
1219	Glyoxylanilide, oxime	> 500
1186	Isatin, 1-acetyl-, dioxime	> 500
	Polysubstituted	
447	Acetanilide, 2-(acetoxymercuri)-4-nitro-	IP 500
445	-----, 2,6-bis(acetoxymercuri)-4-nitro-	IP 500
1241	-----, p-(8-hydroxy-5-quinolylazo)-, monohydrochloride	> 500
948	Oxanilic acid, o-carboxy-, α-ethyl ester	500
1047	Phthalanilic acid, 3-chloro-	> 500
920	Valeramide, δ-cyano-β,γ-dioxo-α,δ-diphenyl-	> 500

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	AMINE OXIDES	
924	Phenazine, 5-oxide	> 500
1668	Resazurin	500
	AMINES*	
	Unsubstituted	
135	Aniline, arsenate	250, IP 25
745	hydrochloride	IP 500
932	2-Biphenylamine	> 500
563	Octadecylamine, N,N-dimethyl-	500, IP 100
724	p-Phenylenediamine	100, IP 50
725	monohydrochloride	100, IP 100
1001	-----, N,N-dimethyl-	50
1002	hemisulfate	75
993	monohydrochloride	100
940	Toluene-2,4-diamine	500
1103	Toluene-2,5-diamine, dihydrochloride	100
	Monosubstituted	
	Acids	
1771	Acetic acid, (p-aminophenyl)-	> 500
1205	Anthranilic acid	> 500
1707	Isobutyric acid, β,β'-bis(dimethylamino)-	> 500
	Halides	
1076	sec-Butylamine, N,N-bis(2-chloroethyl)-, hydrochloride	50
1077	tert-Butylamine, N,N-bis(2-chloroethyl)-, hydrochloride	75
1073	Isopropylamine, N,N-bis(2-chloroethyl)-, hydrochloride	25
1691	p-Phenylenediamine, 2-chloro-, dihydrochloride	> 500
1075	Triethylamine, 2,2',2''-trichloro-, hydrochloride	5
	Heterocyclic Compounds	
1690	Benzimidazole, 2-amino-	500
162	Gramine	IP 250
1663	1,4-Phthalazinedione, 5-amino-2,3-dihydro-	> 500
1215	Rhodamine, 5-(p-dimethylaminobenzylidene)-	> 500
1687	Thiazole, 2-amino-4-(4-biphenylyl)-	> 500
1686	-----, 2-amino-4-methyl-, monohydrochloride	> 500
	Nitro Compounds	
1085	Aniline, N,N-dimethyl-p-nitro-	> 500
569	-----, 2,4-dinitro-	IP 250
443	-----, p-nitro-, mercury(II) deriv.	500, IP 500
1208	Diphenylamine, 2,2',4,4',6,6'-hexanitro-	> 500
1270	p-Toluidine, 3,5-dinitro-	> 500
	Phenols	
854	3,5-Xylenol, 4-amino-	> 500
1708	2,5-Xylohydroquinone, α^2,α^5-bis(dimethylamino)-	> 500
	Miscellaneous	
715	Aniline, p,p'-diselenodi-	100, IP 25
1276	-----, p,p'-dithiobis[N,N-dimethyl-	> 500

*See also Heterocyclic Nitrogen Compounds

TABLE I

Code No.	Classification and Name	Min.LD mg/kg
	AMINES*	
	Monosubstituted	
	Miscellaneous	
201	Aniline, p,p'-oxydi-	IP > 500
1277	-----, p,p'-thiobis[N,N-dimethyl-	> 500
1677	Arsanilic acid	> 800
R1765	Benzaldehyde, p-dimethylamino-, thiosemicarbazone	> 250
1709	2-Butanone, 4-diethylamino-	500
1645	Carbamic acid, methyl-, 5-dimethylamino-o-tolyl ester	100
1733	Hydrazinesulfonic acid, 2-(p-dimethylaminophenyl)-, sodium salt	100
1674	Rhodanilic acid, ammonium salt	> 500
1463	Stibinous acid, bis(m-aminophenyl)-	> 500
1437	Thiocyanic acid, diester with 2,2'-(ethylimino)diethanol	100
1467	diester with 2,2'-(methylimino)diethanol, hydrochloride	50
	Disubstituted	
	Halide-Nitro Compounds	
1271	Aniline, 2-bromo-4-nitro-	> 500
1272	-----, 4-bromo-2-nitro-	> 500
1273	p-Toluidine, N-(5-chloro-2,4-dinitrophenyl)-	> 500
	Heterocyclic-Selenium Compounds	
589	Phenoselenazine, 3-anilino-, monohydrochloride	IP > 500
587	-----, 3-(1-naphthylamino)-	IP > 500
588	-----, 3-(o-toluidino)-	IP > 500
	Mercury-Nitro Compounds	
451	Aniline, 2-(acetoxymercuri)-4-nitro-	IP 250
442	and Aniline, 2,6-bis(acetoxymercuri)-4-nitro-	250, IP 50
452	-----, 2,6-bis(acetoxymercuri)-4-nitro-	100, IP 25
449	-----, 2,6-bis(hydroxymercuri)-4-nitro-	IP 250
446	-----, 2-(hydroxymercuri)-4-nitro-	250, IP 50
453	-----, 2,2'-mercuribis[6-acetoxymercuri-4-nitro-	IP 250
448	-----, 2,2'-mercuribis[4-nitro-	IP > 500
	Miscellaneous	
1206	Anthranilic acid, 5-bromo-	> 500
912	Arsphenamine	> 500
585	Arsanilic acid, N-3-phenoselenazinyl-	>1000, IP 100
1664	Benzenearsonic acid, p-(p-dimethylaminophenylazo)-	> 1000
911	Phenol, 2-amino-4-arsenoso-, hydrochloride	500
586	Phenoselenazine, 3-(p-nitroanilino)-	IP > 500
1738	Pyrimidine, 2-chloro-4-dimethylamino-6-methyl-	2.5
1210	Rhodamine B	500
183	Salicylic acid, 5-amino-, hydrochloride	IP > 500
1232	Serenium, monohydrochloride	> 500
	Polysubstituted	
1682	Benzothiazole, 6-amino-2-mercapto-	> 500
1225	Gallocyanine	> 500
	AMMONIUM COMPOUNDS	
	See Quaternary Nitrogen Compounds	

*See also Heterocyclic Nitrogen Compounds

TABLE I

Code No.	Classification and Name	Min LD mg/kg
	ANHYDRIDES	
	See Acid Anhydrides	
	ANILS	
	See Imines	
	ANTIMONY COMPOUNDS	
1634	Stibine, tri-2-pyridyl-	500
1463	Stibinous acid, bis(m-aminophenyl)-	> 500
	ARSENIC COMPOUNDS	
	Arsonates	
1677	Arsanilic acid	> 800
585	-----, N-3-phenoselenazinyl-	> 1000, IP 100
1796	Benzenearsonic acid	250
1533	-----, o-chloro-	50
1455	-----, p-chloro-	50
1631	-----, 2,5-dichloro-	100
1664	-----, p-(p-dimethylaminophenylazo)-	> 1000
1442	-----, p-ethoxy-	250
1665	-----, p-hydroxy-	> 600
1598	-----, p-methoxy-	500
1657	-----, m-nitro-	300
1434	-----, o-nitro-	100
1441	-----, p-nitro-	100
1221	2-Biphenylarsonic acid	15
1388	disodium salt	20
1243	monosodium salt	15
1320	1-Naphthalenearsonic acid	100
1325	thorium(X) salt	> 500
1630	m-Toluenearsonic acid	75
1365	o-Toluenearsonic acid	25
1454	p-Toluenearsonic acid	100
1679	α-Toluenearsonic acid	500
1772,1773	x,x-Xylenearsonic acid	25, 10
1534	2,4-Xylenearsonic acid	5
1774	magnesium salt	10
1448	2,5-Xylenearsonic acid	5
	Miscellaneous	
1439	Acetic acid, (dihydro-1,3,2-dithiarsenol-2-ylmercapto)-	100
135	Aniline, arsenate	250, IP 25
912	Arsphenamine	> 500
1535	Arsine, cyanodimethyl-	50
1475	Azoxybenzene, 3,3'-bis(dichloroarsino)-	> 500
1255	Biphenyl, 2-arsenoso-	100
1222	Dibenzarsenole, 5-hydroxy-, 5-oxide	100
1435	1,3,2-Dithiarsenole, 2-chlorodihydro-	250
1438	-----, 2,2'-(ethylenedithio)bis[dihydro-	500
1440	10(5H)-Phenarsazineethanol, 10-sulfide	50
911	Phenol, 2-amino-4-arsenoso-, hydrochloride	500
1636	Phenoxathiin, 2-dichloroarsino-	250
	AZINES	
	See Hydrazine Derivatives	

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	AZO AND AZOXY COMPOUNDS	
1241	Acetanilide, p-(8-hydroxy-5-quinolylazo)-, monohydrochloride	> 500
1475	Azoxybenzene, 3,3'-bis(dichloroarsino)-	> 500
1664	Benzenearsonic acid, p-(p-dimethylaminophenylazo)-	> 1000
1239	Formic acid, phenylazo-, 2-phenylhydrazide	> 500
1214	1-Naphthol, 4-(p-nitrophenylazo)-	> 500
1211	Orcinol, 6-(p-nitrophenylazo)-	> 500
1212	Resorcinol, 4-(p-nitrophenylazo)-	> 500
1232	Serenium, monohydrochloride	> 500
	CARBAMATES	
591	Ammonium compound. (5-hydroxycarvacryl)trimethyl ----- iodide, dimethylcarbamate	> 50, IP 2.5
1084	Carbamic acid, (butoxyacetyl)-, butyl ester	> 1000
1645	-----, methyl-, 5-dimethylamino-o-tolyl ester	100
	CARBOHYDRAZIDES	
1201	Carbohydrazide, 1,5-diphenyl-	> 500
	CHROMIUM COMPOUNDS*	
328	Carbamic acid, diethyldithio-, chromium(III) salt	IP > 500
378	-----, dimethyldithio-, chromium(III) salt	IP > 500
1675	Guanidine, monoreineckate	> 500
260	Phenol, p-nitro-, chromium(III) deriv.	> 1000, IP > 500
1674	Rhodanilic acid, ammonium salt	> 500
	COBALT COMPOUNDS*	
735	Nicotine, compound with 1/2 f. wt. cobalt(II) o-benzoylbenzoate, trihydrate	> 500, IP 90
736	compound with 1 f. wt. salicylic acid and 1/2 f. wt. cobalt(II) salicylate, monohydrate	>400, IP 25
734	compound with 1 f. wt. thiocyanic acid and 1/2 f. wt. cobalt(II) thiocyanate	100, IP 100
	CONDENSATION PRODUCTS	
	See Unknown Structures	
	COPPER COMPOUNDS*	
1735	Acetic acid, fluoro-, copper(II) salt	10
383	Carbamic acid, dibutyldithio-, copper(II) salt	> 1000, IP 250
333	-----, diethyldithio-, copper(II) salt	> 1000, IP 250
380	-----, dimethyldithio-, copper(II) salt	> 500, IP 25
561	Carbanilic acid, dithio-, copper(II) salt	IP > 500
540	Nicotine, compound with 1 f. wt. copper(II) benzoate	IP > 50
545	compound with 1 f. wt. copper(I) cyanide	IP 250
542	compound with 1 f. wt. copper(II) salicylate	IP 250
739	compound with 1 f. wt. copper(I) thiocyanate	400, IP 175
541	compound with 1 f. wt. copper(II) thiocyanate	IP 50
738	compound with 1 f. wt. hydrocyanic acid and 1 f. wt. copper(I) cyanide	> 500, IP 50

*See also Inorganic Compounds

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	COPPER COMPOUNDS*	
737	Nicotine, compound with 1 f. wt. picric acid and 1/2 f. wt. copper(II) picrate	400, IP 175
227	Xanthic acid, copper(II) salt	IP > 500
	CYANIDES	
	See Nitriles	
	DIAZO COMPOUNDS	
	See Azo Compounds	
	DISULFIDES	
	See Sulfides	
	DITHIOCARBAMATES	
	See Thiocarbamates	
	ESTERS, CARBOXYLIC ACIDS	
	Unsubstituted	
1530	Acetylenedicarboxylic acid, dimethyl ester	50
207	9,10-Anthradiol, diacetate	IP > 500
571	Maleic acid, bis(2-ethylhexyl) ester	IP > 500
951	Oxalic acid, dimethyl ester	> 500
	Monosubstituted	
	Ethers	
1101	Diglycolic acid, bis(2-methylallyl) ester	500
1071	diallyl ester	250
1070	di-2-butenyl ester	> 1000
998	dibutyl ester	500 to 700
	Halides	
1203	Acetic acid, fluoro-, methyl ester	5
1079	phenyl ester	5
1081	Butyric acid, γ-fluoro-, methyl ester	2.5
1314	Crotonic acid, γ-fluoro-, methyl ester	2
	Sulfides	
1189	Acetic acid, thiodi-, bis(2-ethylhexyl) ester	> 500
1184	diallyl ester	250
1168	di-2-butenyl ester	> 500
1183	dibutyl ester	> 500
	Miscellaneous	
X1915	Acetic acid, phosphono-, triethyl ester	> 500
450	-----, selenocyano-, butyl ester	IP 100
187	Benzofuro[3,2-b]benzofuran-2,7-diol, 4b, 9b-dihydro-4b,9b-diphenyl-, diacetate	IP > 500
1007	Benzoic acid, p-benzamido-, ethyl ester	500
204	Lauric acid, 4,6-dinitro-o-tolyl ester	IP > 500

*See also Inorganic Compounds

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	ESTERS, CARBOXYLIC ACIDS	
	Monosubstituted	
	Miscellaneous	
1223	Oxalacetic acid, diethyl ester, sodium deriv.	> 500
206	Palmitic acid, 4,6-dinitro-o-tolyl ester	500, IP 250
189	Propionic acid, diester with 4b,9b-dihydro-4b,9b-diphenylbenzofuran[3,2-b]benzofuran-2,7-diol	IP > 500
	Polysubstituted	
1315	Butyric acid, γ-fluoro-β-hydroxy-, methyl ester	1
153	Monocrotaline	IP > 500
948	Oxanilic acid, o-carboxy-, α-ethyl ester	500
1472	3H-Pyrrocolinium compound. octahydro-4-(2-hydroxyethyl)-2-methyl ----- chloride, acetate	> 500
1286	Salicylic acid, fluoracetate	10
879	Vulpinic acid	500
	ETHERS	
	Monosubstituted	
	Acids	
933	Anisic acid	> 500
1666	Benzoic acid, o-(carboxymethoxy)-	> 500
1051	o-Veratric acid	> 500
	Amides	
1167	Acetamide, α-(2-butenyloxy)-N-cyclohexyl-	> 500
1059	-----, α-butoxy-N-cyclohexyl	> 1000
975	p-Benzophenetidide	> 500
1052	o-Veratramide	> 500
	Esters	
1101	Diglycolic acid, bis(2-methylallyl) ester	500
1071	diallyl ester	250
1070	di-2-butenyl ester	> 1000
998	dibutyl ester	500 to 750
	Halides	
1261	Ether, bis(p-bromophenyl)	> 500
1258	-----, x,x,x,x,x,x,x-heptachlorodiphenyl	500
1263	-----, x,x,x,x,x,x-hexabromodiphenyl	> 500
1257	-----, x,x,x,x,x,x-hexachlorodiphenyl	> 500
570	-----, isoamyl pentachlorophenyl	IP 500
1260	-----, x,x,x,x,x,x,x,x,x-nonachlorodiphenyl	500
1259	-----, x,x,x,x,x,x,x,x-octachlorodiphenyl	500
1262	-----, x,x,x,x-tetrabromodiphenyl	> 500
	Nitro Compounds	
915	Anisole, 2,4-dinitro-	100
916	-----, 2,4,6-trinitro-	> 500
1146	Phenetole, 2,4-dinitro-	250
	Thioureas	
862	Carbanilide, 2,2'-diethoxythio-	> 500

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	ETHERS	
	Monosubstituted	
	Thioureas	
853	Urea, 1-(o-methoxyphenyl)-2-thio-	100
896	-----, 1-(p-methoxyphenyl)-2-thio-	25
859	-----, 1-o-phenetyl-2-thio-	> 500
860	-----, 1-p-phenetyl-2-thio-	500
	Miscellaneous	
201	Aniline, p,p'-oxydi-	IP > 500
R1753	Anisaldehyde, thiosemicarbazone	> 500
1442	Benzenearsonic acid, p-ethoxy-	250
1598	-----, p-methoxy-	500
989	Benzonitrile, 2,6-dimethoxy-	> 500
1084	Carbamic acid, (butoxyacetyl)-, butyl ester	> 1000
188	1,4-Cyclohexanedione, 2,5-di-p-toloxy-	IP 100
1477	3-Pentyn-2-one, 5-methoxy-	100
1347	1,2-Propanediol, 3-phenoxy-	> 500
942	o-Veratraldehyde, oxime	> 500
1034	phenylhydrazone	> 500
196	semicarbazone	IP > 500
	Polysubstituted	
	Acid-Halides	
986	Acetic acid, (p-chlorophenoxy)-	> 500
1309	-----, (2,4,6-triiodophenoxy)-	> 500
1308	sodium salt	> 500
	Heterocyclic-Hydroxy Compounds	
160	Berbamine	IP 500
152	Capauridine	IP 500
156	Corydine, hydrochloride	IP 100
161	Oxyacanthine	IP 250
154	Scoulerine	IP 250
	Miscellaneous	
947	p-Benzenesulfonanisidide, 4-bromo-	> 500
963	Benzonitrile, 2-methoxy-6-nitro-	500
158	Berberine	IP > 500
155	Corlumine	IP 25
918	Ricinine	75
1232	Serenium, monohydrochloride	> 500
159	Tetrahydropalmatine, l-	IP > 100
898	Urea, 1-(5-chloro-2-methoxyphenyl)-2-thio-	500
R1754	Vanillin, thiosemicarbazone	> 500
	GUANIDINES	
1200	Benzenesulfonic acid, p-(3-guanylguanidino)-	> 500
1690	Benzimidazole, 2-amino-	500
1675	Guanidine, monoreineckate	> 500
X2339	-----, 1-butyl-3-cyano-	> 100
1181	-----, cyano-	> 500
X2340	-----, 1,1-dibutyl-3-cyano-	> 100
855	-----, 1,2,3-triphenyl-	250
1224	Urea, guanyl-	> 500
1177	-----, 1-guanyl-2-thio-	> 500

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	HALIDES	
	Unsubstituted	
	Bromides	
1297	Ethane, 1,1-dibromo-2,2-bis(p-bromophenyl)-	> 1000
1294	-----, 1,1,1-tribromo-2,2-bis(p-bromophenyl)-	> 1000
	Chlorides	
568	Benzene, hexachloro-	IP > 500
X1	Chloroform	IP > 1250
1298	Ethane, 1,1-dichloro-2,2-bis(p-chlorophenyl)-	> 1000
852	-----, 1,1,1-trichloro-2,2-bis(p-chlorophenyl)-	in oil 200
1303	-----, 1,1,1-trichloro-2-(o-chlorophenyl)-2-(p-chlorophenyl)-	> 1000
1302	-----, 1,1,1-trichloro-2-(p-chlorophenyl)-2-phenyl-	> 1000
1300	-----, 1,1,1-trichloro-2,2-diphenyl-	> 1000
1288	Ethylene, 1,1-dichloro-2,2-bis(p-chlorophenyl)-	> 1000
1304	-----, 1,1-dichloro-2-(o-chlorophenyl)-2-(p-chlorophenyl)-	> 1000
1301	Mesitylene, α,α,α,α',α',α',α'',α'',α''-nonachloro-	> 1000
1367	Propane, 1,2-dichloro- and Propene, 1,3-dichloro-	250
	Mixed	
1296	Ethane, 1,1-dibromo-2,2-bis(p-chlorophenyl)-	> 1000
1597	-----, 1,2-dibromo-1,1,2,2-tetrachloro-	> 500
1295	-----, 1,1,1-tribromo-2,2-bis(p-chlorophenyl)-	> 1000
	Monosubstituted	
	Acids	
1734	Acetic acid, fluoro-, aluminum salt	10
1430	calcium salt	2
1735	copper(II) salt	10
1432	magnesium salt	2
1736	mercury(II) salt	10
1080	sodium salt	5
1737	thallium(I) salt	10
1658	-----, iodo-, potassium salt	> 500
934	Benzoic acid, o-bromo-	> 500
937	-----, o-chloro-	> 500
938	-----, p-chloro-	> 500
1327	Butyric acid, γ-fluoro-, sodium salt	5
1409	Crotonic acid, γ-fluoro-, sodium salt	2
1283	Propionic acid, pentachloro-	> 500
1480	m-Toluic acid, α,α,α-trifluoro-, thallium(I) salt	50
	Alcohols	
1204	Ethanol, 2-fluoro-	5
X5990	1,2-Propanediol, 3-chloro-	250, IP 10
996	-----, 3-chloro-2-methyl-	> 500
	Amides	
1531	Acetamide, N,N-diethyl-α-fluoro-	25
1061	Acetanilide, p-bromo-	> 500
X5991	-----, α-fluoro-	3
X5992	-----, α-fluoro-p-phenyl-	10
960	Benzanilide, 2'-bromo-	> 500
970	-----, 3'-bromo-	> 500

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	HALIDES	
	Monosubstituted	
	Amides	
971	Benzanilide, 4'-bromo-	> 500
957	-----, 2'-chloro-	> 500
958	-----, 3'-chloro-	> 500
959	-----, 4'-chloro-	> 500
976	-----, 2',5'-dichloro-	> 500
	Amines	
1076	sec-Butylamine, N,N-bis(2-chloroethyl)-, hydrochloride	50
1077	tert-Butylamine, N,N-bis(2-chloroethyl)-, hydrochloride	75
1073	Isopropylamine, N,N-bis(2-chloroethyl)-, hydrochloride	25
1691	p-Phenylenediamine, 2-chloro-, dihydrochloride	> 500
1075	Triethylamine, 2,2',2''-trichloro-, hydrochloride	5
	Arsenic Compounds	
1533	Benzenearsonic acid, o-chloro-	50
1455	-----, p-chloro-	50
1631	-----, 2,5-dichloro-	100
	Esters	
1203	Acetic acid, fluoro-, methyl ester	5
1079	phenyl ester	5
1081	Butyric acid, γ-fluoro-, methyl ester	25
1314	Crotonic acid, γ-fluoro-, methyl ester	2
	Ethers	
1261	Ether, bis(p-bromophenyl)	> 500
1258	-----, x,x,x,x,x,x,x-heptachlorodiphenyl	500
1263	-----, x,x,x,x,x,x-hexabromodiphenyl	> 500
1257	-----, x,x,x,x,x,x-hexachlorodiphenyl	> 500
570	-----, isoamyl pentachlorophenyl	IP 500
1260	-----, x,x,x,x,x,x,x,x,x-nonachlorodiphenyl	500
1259	-----, x,x,x,x,x,x,x,x-octachlorodiphenyl	500
1262	-----, x,x,x,x-tetrabromodiphenyl	> 500
	Heterocyclic Compounds	
1683	Benzothiazole, 2-chloro-	250
1256	Dibenzofuran, x,x-dichloro-	250
865	Epichlorohydrin	250
	Imides	
1046	Phthalimide, N-(p-bromophenyl)-	> 500
1039	-----, N-(p-chlorophenyl)-	> 500
	Nitro Compounds	
997	Benzene, 1-chloro-2,4-dinitro-	> 500
1249	-----, x,x-dichloro-x,x-dinitro- and Benzene, x,x-dichloro-x-nitro-	> 500
1120	-----, 1,5-dichloro-2,3-dinitro-	> 500
1144	-----, 1-fluoro-2,4-dinitro-	50
1115	-----, 1-fluoro-4-nitro-	250
1299	Ethane, 1,1,1-trichloro-2,2-bis(4-chloro-x-nitrophenyl)-	> 1000
	Phenols	
1264	o-Cresol, 3,4,5,6-tetrabromo-	> 500

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	HALIDES	
	Monosubstituted	
	Phenols	
1267	Phenol, 3,5-dibromo-2,4,6-trichloro-	> 500
1245	-----, pentachloro-	250
1265	-----, 2,4,6-tribromo-	> 500
215	Resorcinol, tetrachloro-	IP 100
	Phosphorus Compounds	
X1952	Benzenephosphonic acid, p-chloro-, diethyl ester	> 250
X1919	Ethanephosphonic acid, bis(p-chlorophenyl) ester	> 250
X1951	Methanephosphonic acid, trichloro-, diethyl ester	> 250
X1911	Phosphoric acid, tris(2-chloroethyl) ester	> 250
	Sulfonamides	
1055	Benzenesulfonamide, p-bromo-N,N-dimethyl-	500
198	-----, p-bromo-N-ethyl-	IP 250
945, 200	-----, p-bromo-N-isobutyl-	> 500, IP > 500
199	-----, p-bromo-N-propyl-	IP 500
1053	-----, N-butyl-p-chloro-	> 500
930	-----, p-chloro-	500
1054	-----, p-chloro-N-propyl-	500
1056	Benzenesulfonanilide, 4,4'-dibromo-	> 500
946	p-Benzenesulfonotoluidide, 4-bromo-	> 500
	Thioureas	
X2078	Carbanilide, thio[3,3'-bis(trichloromethyl)]-	> 250
895	Urea, 1-(p-bromophenyl)-2-thio-	50
858	-----, 1-(m-chlorophenyl)-2-thio-	250
857	-----, 1-(o-chlorophenyl)-2-thio-	15
869	-----, 1-(p-chlorophenyl)-2-thio-	15
902	-----, 1-(3-chloro-o-tolyl)-2-thio-	5
992	-----, 1-(4-chloro-o-tolyl)-2-thio-	10
843	-----, 1-(2,5-dichlorophenyl)-2-thio-	500
	Miscellaneous	
1082	Acetonitrile, bromophenyl-	100
R1756	Benzaldehyde, p-chloro-, thiosemicarbazone	> 500
894	o-Benzenedithiol, 4-chloro-, tin(II) deriv.	> 500
1104	Camphor, 3-bromo-, d-	> 500
1266	2,5-Cyclohexadien-1-one, hexachloro-	> 500
1490	Disulfide, bis(2,2'-dichloroisopropyl)	> 500
1476	Glyoxime, chloromethyl-	100
1704	Hydrazine, (2,5-dichlorophenyl)-	500
1466	2-Propanone, chloro-, oxime	250
1661	p-Quinone, 2,6-dichloro-	500
1274	Sulfide, bis(p-chlorophenyl)	> 500
1641	Sulfoxide, 2-chloroethyl vinyl	100
	Polysubstituted	
	Acid-Ethers	
986	Acetic acid, (p-chlorophenoxy)-	> 500
1309	-----, (2,4,6-triiodophenoxy)-	> 500
1308	sodium salt	> 500
	Acid-Phenols	
1322	Benzoic acid, 4-hydroxy-3,5-diiodo-	> 500

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	HALIDES	
	Polysubstituted	
	Acid-Phenols	
1324	Salicylic acid, 3,5-diiodo-	500
	Amine-Nitro Compounds	
1271	Aniline, 2-bromo-4-nitro-	> 500
1272	-----, 4-bromo-2-nitro-	> 500
1273	p-Toluidine, N-(5-chloro-2,4-dinitrophenyl)-	> 500
	Nitro-Phenols	
1268	Phenol, 2-chloro-4,6-dinitro-	500
1248	-----, 2-chloro-4-nitro-	100
1289	sodium deriv.	100
1118	-----, 2,4-dichloro-6-nitro-	100
1311	sodium deriv.	50
	Nitro-Sulfides	
1680	Disulfide, bis(4-chloro-2-nitrophenyl)	> 500
1275	Sulfide, bis(2-chloro-4-nitrophenyl)	> 500
1116	-----, bis(2,4-dichloro-6-nitrophenyl)	> 500
1485	-----, 2-chloroethyl o-nitrophenyl	> 500
1484	-----, 2-chloroethyl p-nitrophenyl	> 500
	Miscellaneous	
1206	Anthranilic acid, 5-bromo-	> 500
947	p-Benzenesulfonanisidide, 4-bromo-	> 500
181	Benzenesulfonic acid, p-bromo-, p-nitrophenyl ester	IP > 500
1315	Butyric acid, γ-fluoro-β-hydroxy-, methyl ester	1
1310	sodium salt	1
1047	Phthalanilic acid, 3-chloro-	> 500
213	Piperidine, 1-(p-bromophenylsulfonyl)-	IP > 500
1647	2-Propanol, 1-fluoro-3-propylmercapto-	50
1738	Pyrimidine, 2-chloro-4-dimethylamino-6-methyl-	2.5
1162	5-Quinolinesulfonic acid, 8-hydroxy-7-iodo-	> 500
1693	p-Quinone, 2,5-dichloro-3,6-dihydroxy-	> 500
1213	p-Quinone imine, 2,6-dibromo-N-chloro-	> 500
1216	-----, N,2,6-trichloro-	> 500
R1766	Salicylaldehyde, 5-chloro-, thiosemicarbazone	> 500
1286	Salicylic acid, fluoroacetate	10
1644	Sulfone, 2-chloroethyl p-nitrophenyl	> 500
898	Urea, 1-(5-chloro-2-methoxyphenyl)-2-thio-	500
	HALOIMINES	
	See Imines	
	HEMIACETALS	
1362	Sorbitol, 3,5-bis(hydroxymethyl)-2,4-methylene-, D-, tetraacetate	> 500
	HETEROCYCLIC COMPOUNDS	
	Arsenic	
1222	Dibenzarsenole, 5-hydroxy-, 5-oxide	100
1440	10(5H)-Phenarsazineethanol, 10-sulfide	50

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	HETEROCYCLIC COMPOUNDS	
	Arsenic and Sulfur	
1439	Acetic acid, (dihydro-1,3,2-dithiarsenol-2-ylmercapto)-	100
1435	1,3,2-Dithiarsenole, 2-chlorodihydro-	250
1438	-----, 2,2'-(ethylenedithio)bis[dihydro-	500
	Mercury	
990	2,5-Cyclohexadien-1-one, 2-(hydroxymercuri)-4-isonitro-6-nitro-, 2,4-anhydride	250
	Nitrogen	
1241	Acetanilide, p-(8-hydroxy-5-quinolylazo)-, monohydrochloride	> 500
1062	Alloxan, monohydrate	> 500
1646	1-Aziridinepropionitrile	100
907	Barbituric acid, 2-thio-	> 500
1235	Benzimidazole	500
1690	-----, 2-amino-	500
1670	-----, 2-methyl-	500
1689	-----, 5-methyl-	500
1662	-----, 6-nitro-	500
1218	1H-Benzotriazole	500
1207	2,2'-Bipyridine	250
152	Capauridine	IP 500
1008	Carbazole, 9-benzoyl-	> 500
155	Corlumine	IP 25
156	Corydine, hydrochloride	IP 100
X2	Glycocyamidine, 5,5-diphenyl-	> 1000
162	Gramine	IP 250
1702	3-Indoleacetic acid	> 500
1703	3-Indolebutyric acid	> 500
1094	Isatin	> 500
1140	3-oxime	> 500
1141	-----, 1-acetyl-	> 500
1186	dioxime	> 500
760	Maleimide, N-4-biphenylyl-	> 1000, IP 250
759	-----, N-(o-nitrophenyl)-	> 1000, IP 250
566	-----, N-phenyl-	100, IP 25
761	-----, N,N'-m-phenylenedi-	>500, IP 50
757	-----, N-o-tolyl-	250, IP 50
758	-----, N-p-tolyl-	500, IP 50
153	Monocrotaline	IP > 500
733	Nicotine, compound with 1/3 f. wt. aluminum picrate	200, IP 100
740	compound with 1. f. wt. benzoic acid and 1/2 f. wt. manganese(II) benzoate	> 700, IP 350
735	compound with 1/2 f. wt. cobalt(II) o-benzoyl-benzoate, trihydrate	> 500, IP 90
540	compound with 1 f. wt. copper(II) benzoate	IP 50
545	compound with 1 f. wt. copper(I) cyanide	IP 250
542	compound with 1 f. wt. copper(II) salicylate	IP 250
739	compound with 1 f. wt. copper(I) thiocyanate	400, IP 175
541	compound with 1 f. wt. copper(II) thiocyanate	IP 50
738	compound with 1 f. wt. hydrocyanic acid and 1 f. wt. copper(I) cyanide	> 500, IP 50
741	compound with 1/2 f. wt. manganese(II) o-benzoyl-benzoate, trihydrate	300, IP 300
743	compound with 1/2 f. wt. nickel(II) o-benzoyl benzoate, trihydrate	150, IP 75

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	HETEROCYCLIC COMPOUNDS	
	Nitrogen	
737	Nicotine, compound with 1 f. wt. picric acid and 1/2 f. wt. copper(II) picrate	400, IP 175
736	compound with 1 f. wt. salicylic acid and 1/2 f. wt. cobalt(II) salicylate	> 400, IP 25
734	compound with 1 f. wt. thiocyanic acid and 1/2 f. wt. cobalt(II) thiocyanate	100, IP 100
544	compound with 1 f. wt. zinc salicylate	IP 100
744	compound with 1/2 f. wt. zinc thiocyanate	200, IP 60
543	compound with 1 f. wt. zinc thiocyanate	IP 100
1064	Nicotinonitrile, 1,2-dihydro-4,6-dimethyl-2-oxo-	> 500
1066	-----, 1,2-dihydro-6-hydroxy-1,4-dimethyl-2-oxo-	> 500
170, 1065	-----, 1,2-dihydro-1,4,6-trimethyl-2-oxo-	> 500, IP 250
923	Phenazine	> 500
924	5-oxide	> 500
1663	Phthalazinedione, 5-amino-2,3-dihydro-	> 500
184	Phthalimide	IP > 500
1046	-----, N-(p-bromophenyl)-	> 500
1039	-----, N-(p-chlorophenyl)-	> 500
1041	-----, N-ethyl-	> 500
1305	-----, N-isobutyl-	> 500
1043	-----, N-isopropyl-	> 500
1040	-----, N-methyl-	> 500
756	-----, N-1-naphthyl-	IP > 500
182	-----, N-phenyl-	IP > 500
1042	-----, N-propyl-	> 500
1045	-----, N-o-tolyl-	> 500
1161	Picrolonic acid	> 500
973	Piperazine, 1,4-dibenzoyl-	500
213	Piperidine, 1-(p-bromophenylsulfonyl)-	IP > 500
1012	-----, 1-(phenylsulfonyl)-	> 500
1022	-----, 1-(p-tolylsulfonyl)-	> 500
1669	2,3-Pyrazinedicarboxylic acid	> 500
1238	Pyrazole, 3,5-dimethyl-	> 500
1319	Pyridine, 2-hexyl-	> 500
1738	Pyrimidine, 2-chloro-4-dimethylamino-6-methyl-	2.5
1472	3H-Pyrrocolinium compound, octahydro-4-(2-hydroxyethyl)-2-methyl ----- chloride, acetate	> 500
1162	5-Quinolinesulfonic acid, 8-hydroxy-7-iodo-	> 500
1202	8-Quinolinol	> 500
171	2,3-Quinoxalinediol	IP 500
918	Ricinine	75
154	Scoulerine	IP 250
1634	Stibine, tri-2-pyridyl-	500
1254	2-Stilbazole	> 500
159	Tetrahydropalmatine, l-	IP > 100
1348	Thiocyanic acid, 2-pyridyl ester	500
1004	Xanthine, 3-methyl-	> 500
	Nitrogen and Oxygen	
1684	2-Benzoxazolethiol	> 500
160	Berbamine	IP 500
158	Berberine	IP > 500
1225	Gallocyanine	> 500
1278	Morpholine, 4-(o-nitrophenyl)-	> 500
949	-----, 4-phenyl-	> 500

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	HETEROCYCLIC COMPOUNDS	
	Nitrogen and Oxygen	
1014	Morpholine, 4-(phenylsulfonyl)-	> 500
1017	-----, 4-(p-tolylsulfonyl)-	> 500
161	Oxyacanthine	IP 250
164	Protopine	IP 100
1668	Resazurin	500
1667	Resorufin	> 500
166	Sanguinarine, sulfate	IP 500
	Nitrogen and Sulfur	
754	1,2-Benzisothiazol-3(2H)-one, 2-benzyl-, 1,1-dioxide	IP > 500
1682	Benzothiazole, 6-amino-2-mercapto-	> 500
1683	-----, 2-chloro-	250
1681	-----, 2,2'-dithiobis-	> 500
1705	-----, 2-hydrazino-	100
851	1,2,4-Dithiazolidine-3-thione, 5-imino-	> 200
864	Perthiocyanic acid	> 500
1215	Rhodanine, 5-(p-dimethylaminobenzylidene)-	> 500
572	Sulfide, lorol 2-thiazolinyl	IP > 500
1687	Thiazole, 2-amino-4-(4-biphenylyl)-	> 500
1686	-----, 2-amino-4-methyl-, monohydrochloride	> 500
1688	2-Thiazolethiol, 4-phenyl-	> 500
1685	4-Thiazoline-2-thiol	500
965	Thiuret, N^3-p-tolyl-, monohydriodide	> 500
1240	Titan yellow	> 500
	Nitrogen and Selenium	
585	Arsanilic acid, N-3-phenoselenazinyl-	> 1000, IP 100
381	12H-Benzo[b]phenoselenazine	IP 500
454	-----, 12-acetyl-	IP > 500
527	-----, 12-methyl-, hydriodide	IP > 500
589	Phenoselenazine, 3-anilino-, monohydrochloride	IP > 500
587	-----, 3-(1-naphthylamino)-	IP > 500
586	-----, 3-(p-nitroanilino)-	IP > 500
588	-----, 3-(o-toluidino)-	IP > 500
	Oxygen	
1500	Acrylophenone, β-2-furyl-	> 500
1145	Ascaridole	250
186	Benzofuro[3,2-b]benzofuran-2,7-diol, 4b,9b-dihydro-4b,9b-diphenyl-	IP > 500
187	diacetate	IP > 500
1710	1,2H-Benzopyran-3-carboxylic acid, 6-methyl-2-oxo-	75
1251	-----, 2-oxo-	> 500
194	Chalcone, 4'-methyl-3,4-methylenedioxy-	IP > 500
155	Corlumine	IP 25
936	Coumarilic acid	> 500
1256	Dibenzofuran, x,x-dichloro-	250
1639	-----, 2-(dicyanophosphino)-	> 500
1698	-----, 3-nitro-	> 500
865	Epichlorohydrin	250
558	2'-Flavanol, 2,4,4,4',7-pentamethyl-	IP > 500
1465	Furan, 2-(2-nitrovinyl)-	250
153	Monocrotaline	IP > 500

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	HETEROCYCLIC COMPOUNDS	
	Oxygen	
1457	7-Oxabicyclo[2.2.1]-5-heptene-2,3-dicarboxylic anhydride	250
132	Phenolphthalein	>1000, IP 500
1252	$\Delta^{1,\alpha}$-Phthalanacetic acid, 3-oxo-	> 500
202	Phthalide	IP > 500
1033	Piperonal, phenylhydrazone	> 500
R1755	thiosemicarbazone	> 500
175	Piperonyloin	IP > 500
189	Propionic acid, diester with 4b,9b-dihydro-4b,9b-diphenyl-benzofuro[3,2-b]benzofuran-2,7-diol	IP > 500
880	Pulvinic acid	1000
1210	Rhodamine B	500
1362	Sorbitol, 3,5-bis(hydroxymethyl)-2,4-methylene-, D-, tetraacetate	> 500
1326	-----, 1,3:2,4:5,6-trimethylene-, D-	> 500
879	Vulpinic acid	500
1106	Xanthone	> 500
1114	Xanthydrol	500
	Oxygen and Sulfur	
1636	Phenoxathiin, 2-dichloroarsino-	250
1474	-----, 2-(dicyanophosphino)-	50
	Sulfur	
440	Thiophene, 2-(acetoxymercuri)-5-(hydroxymercuri)-	IP 50
R1603	2-Thiophenecarboxaldehyde, thiosemicarbazone	> 500
	HYDRAZIDES	
	Unsubstituted	
1036	Hydrazine, 1-formyl-2-phenyl-	500
1037	Propionic acid, 2-phenylhydrazide	250
	Substituted	
	Ammonium compound.	
1672	(carboxymethyl)trimethyl ----- chloride, hydrazide	> 500
1239	Formic acid, phenylazo-, 2-phenylhydrazide	> 500
978	Hydrazine, 1,2-dibenzoyl-1-phenyl-	> 500
1663	Phthalazinedione, 5-amino-2,3-dihydro-	> 500
1161	Picrolonic acid	> 500
	HYDRAZINES AND DERIVATIVES	
	Unsubstituted	
1706	Benzaldehyde, azine	> 500
1035	Benzophenone, phenylhydrazone	> 500
	Substituted	
1705	Benzothiazole, 2-hydrazino-	100
1704	Hydrazine, (2,5-dichlorophenyl)-	500
1148	-----, (2,4-dinitrophenyl)-	> 500

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	HYDRAZINES AND DERIVATIVES	
	Substituted	
1733	Hydrazinesulfonic acid, 2-(p-dimethylaminophenyl)-, sodium salt	100
1033	Piperonal, phenylhydrazone	> 500
1699	Succinic acid, dioxo-, phenylosazone	> 500
1034	o-Veratraldehyde, phenylhydrazone	> 500
	HYDRAZONES	
	See Hydrazines and Derivatives	
	HYDROCARBONS	
1050	Terphenyl (mixture of isomers)	> 500
1048	o-Terphenyl	> 500
1049	p-Terphenyl	500
	HYDROXAMIC ACIDS	
1196	Benzohydroxamic acid	> 500
1187	potassium salt	> 500
	HYDROXY DERIVATIVES OF HETEROCYCLIC COMPOUNDS	
1241	Acetanilide, p-(8-hydroxy-5-quinolylazo)-, monohydrochloride	>500
186	Benzofuro[3,2-b]benzofuran-2,7-diol, 4b,9b-dihydro-4b,9b-diphenyl-	IP > 500
160	Berbamine	IP 500
152	Capauridine	IP 500
156	Corydine, hydrochloride	IP 100
1225	Gallocyanine	> 500
153	Monocrotaline	IP > 500
1066	Nicotinonitrile, 1,2-dihydro-6-hydroxy-1,4-dimethyl-2-oxo-	> 500
161	Oxyacanthine	IP 250
880	Pulvinic acid	1000
1162	5-Quinolinesulfonic acid, 8-hydroxy-7-iodo-	> 500
1202	8-Quinolinol	> 500
171	2,3-Quinoxalinediol	IP 500
1668	Resazurin	500
1667	Resorufin	> 500
154	Scoulerine	IP 250
879	Vulpinic acid	500
1114	Xanthydrol	500
	HYDROXYLAMINES AND DERIVATIVES	
	Unsubstituted	
1242	Acetone, oxime	> 500
928	Camphor, d-, oxime	75
931	Cyclohexanone, oxime	> 500
1093	Glyoxime, dimethyl-	250
1063	Phthalaldehyde, dioxime	500

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	HYDROXYLAMINES AND DERIVATIVES	
	Substituted	
1091	Benzil, monooxime	500
1090	Benzoin, oxime	> 500
1217	Cupferron	250
1231	Glyoxal, 1-phenyl-, 2-oxime	100
1476	Glyoxime, chloromethyl-	100
1170	-----, dimethyl-, O,O'-bis(2-cyanoethyl) ether	> 500
1219	Glyoxylanilide, oxime	> 500
1140	Isatin, 3-oxime	> 500
1186	-----, 1-acetyl-, dioxime	> 500
1659	Neocupferron	500
1466	2-Propanone, chloro-, oxime	250
1113	β-Resorcylaldehyde, oxime	500
929	Salicylaldehyde, oxime	400
942	o-Veratraldehyde, oxime	> 500
	IMIDES	
1141	Isatin, 1-acetyl-	> 500
760	Maleimide, N-4-biphenylyl-	> 1000, IP 250
759	-----, N-(o-nitrophenyl)-	> 1000, IP 250
566	-----, N-phenyl-	100, IP 25
761	-----, N,N'-m-phenylenedi-	> 500, IP 50
757	-----, N-o-tolyl-	250, IP 50
758	-----, N-p-tolyl-	500, IP 50
184	Phthalimide	IP > 500
1046	-----, N-(p-bromophenyl)-	> 500
1039	-----, N-(p-chlorophenyl)-	> 500
1041	-----, N-ethyl-	> 500
1305	-----, N-isobutyl-	> 500
1043	-----, N-isopropyl-	500
1040	-----, N-methyl-	> 500
756	-----, N-1-naphthyl-	IP > 500
182	-----, N-phenyl-	IP > 500
1042	-----, N-propyl-	> 500
1045	-----, N-o-tolyl-	> 500
	IMINES	
1220	Glycinonitrile, N-methylene-	> 500
1213	p-Quinone imine, 2,6-dibromo-N-chloro-	> 500
1216	-----, N,2,6-trichloro-	> 500
	INORGANIC COMPOUNDS	
1479	Ammonium fluosilicate[$(NH_4)_2SiF_6$]	100
1481	Barium fluoborate[$Ba(BF_4)_2$]	250
1482	Barium fluosilicate($BaSiF_6$)	500
564	Barium reineckate	> 500, IP 100
1483	Cadmium fluoborate[$Cd(BF_4)_2$]	250
1487	Cadmium fluosilicate($CdSiF_6$)	100
1389	Cadmium sulfide	> 500
1498	Cobalt(II) fluoborate[$Co(BF_4)_2$]	500
341	Copper(II) cyanide	> 500, IP 50
342	Lead(II) cyanide	> 1000, IP 100
1486	Lead(II) fluosilicate($PbSiF_6$)	250

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	INORGANIC COMPOUNDS	
1739	Mercury(II) chloride	> 80
330	Mercury(II) cyanide	25, IP 7.5
1488	Nickel(II) fluoborate[$Ni(BF_4)_2$]	500
1495	Nickel(II) fluosilicate($NiSiF_6$)	100
1632	Phosphonitrile chloride($PNCl_2$), polymer	> 500
X5995	Potassium selenocyanate	IP 200
323	Selenious acid	25, IP 10
966	Sodium nitroprusside $Na_2[Fe(NO)(CN)_5]$	20
322	Sodium selenite(Na_2SeO_3)	100, IP 10
1496	Strontium fluoborate[$Sr(BF_4)_2$]	500
1493	Strontium fluosilicate($SrSiF_6$)	250
176	Sulfur thiocyanate[$S(SCN)_2$]	IP > 500
1468	Thallium(I) fluoborate($TlBF_4$)	50
1593	Thallium(I) fluoride	50
1469	Thallium(I) fluosilicate(Tl_2SiF_6)	50
1491	Thallium(I) selenite(Tl_2SeO_3)	50
1005	Uranyl nitrate	> 500
X5994	Zinc cyanide	IP 100
1492	Zinc fluoborate[$Zn(BF_4)_2$]	> 500
1489	Zinc fluosilicate($ZnSiF_6$)	100
881	Zinc oxide	> 1000
	IRON COMPOUNDS*	
331	Carbamic acid, diethyldithio-, iron(III) salt	IP > 500
246	-----, dimethyldithio-, iron(III) salt	IP > 500
261	Phenol, p-nitro-, iron(III) deriv.	IP 250
	ISOCYANATES	
1458	Isocyanic acid, diester with 1,6-hexanediol	500
	KETONES**	
	Unsubstituted	
	Monoketones	
1499	Chalcone	> 500
193	2,4-Pentadienophenone, 5-phenyl-	IP > 500
	Polyketones	
1696	1,3-Butanedione, 1-phenyl-	> 500
1321	1,3-Cyclohexanedione, 5,5-dimethyl-	> 500
1291	1,3-Indandione, 2-acetyl-	250
999	-----, 2-isovaleryl-	250
1060	-----, 2-pivalyl-	150
1292	-----, 2-propionyl-	500
1092	Ninhydrin	250
1797	1,3-Propanedione, 1,3-diphenyl-	> 500
	Monosubstituted	
	Ethers	
188	1,4-Cyclohexanedione, 2,5-di-p-toloxy-	IP 100

* See also Inorganic Compounds

** See also Quinones

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	KETONES*	
	Monosubstituted	
	Ethers	
1477	3-Pentyn-2-one, 5-methoxy-	100
	Halides	
1104	Camphor, 3-bromo-, d-	> 500
1266	2,5-Cyclohexadien-1-one, hexachloro-	> 500
	Heterocyclic Compounds	
1500	Acrylophenone, β-2-furyl-	> 500
194	Chalcone, 4'-methyl-3,4-methylenedioxy-	IP > 500
1094	Isatin	> 500
164	Protopine	IP 100
1106	Xanthone	> 500
	Nitriles	
889	Ketiponitrile, α,δ-diphenyl-	50
1174	Pimelonitrile, γ-acetyl-γ-(2-cyanoethyl)-	> 500
	Nitro Compounds	
1695	Chalcone, 3-nitro-	> 500
1694	3-Pentadienone, 1,5-bis(m-nitrophenyl)-	> 500
	Phenols	
1233	Acetophenone, 2,4-dihydroxy-	> 500
941	Propiophenone, p-hydroxy-	> 500
	Miscellaneous	
1676	Acetoacetanilide	> 500
1091	Benzil, monooxime	500
1709	2-Butanone, 4-diethylamino-	500
1231	Glyoxal, 1-phenyl-, 2-oxime	100
1223	Oxalacetic acid, diethyl ester, sodium deriv.	> 500
1460	2,4-Pentanedione, dimethylthallium deriv.	> 500
1497	4-Pentyn-2-one, 5-hydroxy-	50
903	Urea, 1-(p-benzoylphenyl)-2-thio-	> 500
	Polysubstituted	
1318	Acetic acid, (2,5-dioxo-3-cyclohexene-1-ylmercapto)-	250
1062	Alloxan, monohydrate	> 500
990	2,5-Cyclohexadien-1-one, 2-(hydroxymercuri)-4-isonitro-6-nitro-, 2,4-anhydride	250
1141	Isatin, 1-acetyl-	> 500
175	Piperonyloin	IP > 500
1213	p-Quinone imine, 2,6-dibromo-N-chloro-	> 500
1216	-----, N,2,6-trichloro-	> 500
1668	Resazurin	500
1667	Resorufin	> 500
920	Valeramide, δ-cyano-β,γ-dioxo-α,δ-diphenyl-	> 500
	LACTAMS	
754	1,2-Benzisothiazol-3(2H)-one, 2-benzyl-, 1,1-dioxide	IP > 500
1094	Isatin	> 500
1140	3-oxime	> 500
1064	Nicotinonitrile, 1,2-dihydro-4,6-dimethyl-2-oxo-	> 500
1066	-----, 1,2-dihydro-6-hydroxy-1,4-dimethyl-2-oxo-	> 500

* See also Quinones

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	LACTAMS	
1065, 170	Nicotinonitrile, 1,2-dihydro-1,4,6-trimethyl-2-oxo-	> 500, IP 250
918	Ricinine	75
	LACTONES	
1710	1,2H-Benzopyran-3-carboxylic acid, 6-methyl-2-oxo-	75
1251	-----, 2-oxo-	> 500
155	Corlumine	IP 25
132	Phenolphthalein	>1000, IP 500
1252	$\Delta^{1,\alpha}$-Phthalanacetic acid, 3-oxo-	> 500
202	Phthalide	IP > 500
880	Pulvinic acid	1000
879	Vulpinic acid	500
	LEAD COMPOUNDS*	
325	Carbamic acid, diethyldithio-, lead(II) salt	IP 500
	Lead compounds.	
1494	triphenyl ----- fluosilicate(H_2SiF_6)	100
565	triethyl ----- oleate	50, IP 25
242	Phenol, p-nitro-, lead(II) deriv.	IP > 500
265	Salicylic acid, lead(II) salt	IP > 500
	MANGANESE COMPOUNDS	
740	Nicotine, compound with 1 f. wt. benzoic acid and 1/2 f. wt. manganese(II) benzoate	> 700, IP 350
741	compound with 1/2 f. wt. manganese(II) o-benzoyl-benzoate, trihydrate	300, IP 300
244	Phenol, p-nitro-, manganese(II) deriv.	500, IP 100
	MERCAPTANS	
	See Thiols	
	MERCURY COMPOUNDS*	
447	Acetanilide, 2-(acetoxymercuri)-4-nitro-	IP 500
445	-----, 2,6-bis(acetoxymercuri)-4-nitro-	IP 500
1736	Acetic acid, fluoro-, mercury(II) salt	10
451	Aniline, 2-(acetoxymercuri)-4-nitro-	IP 250
442	and Aniline, 2,6-bis(acetoxymercuri)-4-nitro-	250, IP 50
452	-----, 2,6-bis(acetoxymercuri)-4-nitro-	100, IP 25
449	-----, 2,6-bis(hydroxymercuri)-4-nitro-	IP 250
446	-----, 2-(hydroxymercuri)-4-nitro-	250, IP 50
453	-----, 2,2'-mercuribis[6-acetoxymercuri-4-nitro-	IP 250
448	-----, 2,2'-mercuribis[4-nitro-	IP > 500
443	-----, p-nitro-, mercury(II) deriv.	500, IP 500
326	Carbamic acid, diethyldithio-, mercury(II) salt	> 1000, IP 100
990	2,5-Cyclohexadien-1-one, 2-(hydroxymercuri)-4-isonitro-6-nitro-, 2,4-anhydride	250
726	Mercury, diphenyl-	500, IP 50
	Mercury compounds.	
321	o-nitrophenyl ----- acetate	100, IP 25
716	phenyl ----- chloride	250, IP 50

* See also Inorganic Compounds

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	MERCURY COMPOUNDS*	
219	Phenol, o-(chloromercuri)-	100, IP 25
229	-----, p-(chloromercuri)-	> 500, IP 50
964	-----, 2-(chloromercuri)-4,6-dinitro-	500
235	-----, o-(hydroxymercuri)-	100, IP 25
259	-----, p-nitro-, mercury(II) deriv.	> 500, IP 50
440	Thiophene, 2-(acetoxymercuri)-5-(hydroxymercuri)-	IP 50
	NICKEL COMPOUNDS*	
743	Nicotine, compound with 1/2 f. wt. nickel(II) o-benzoylbenzoate, trihydrate	150, IP 75
	NICOTINE DERIVATIVES	
733	Nicotine, compound with 1/3 f. wt. aluminum picrate	200, IP 100
740	compound with 1 f. wt. benzoic acid and 1/2 f. wt. manganese(II) benzoate	> 700, IP 350
735	compound with 1/2 f. wt. cobalt(II) o-benzoylbenzoate, trihydrate	> 500, IP 90
540	compound with 1 f. wt. copper(II) benzoate	IP 50
545	compound with 1 f. wt. copper(I) cyanide	IP 250
542	compound with 1 f. wt. copper(II) salicylate	IP 250
739	compound with 1 f. wt. copper(I) thiocyanate	400, IP 175
541	compound with 1 f. wt. copper(II) thiocyanate	IP 50
738	compound with 1 f. wt. hydrocyanic acid and 1 f. wt. copper(I) cyanide	> 500, IP 50
741	compound with 1/2 f. wt. manganese(II) o-benzoylbenzoate, trihydrate	300, IP 300
743	compound with 1/2 f. wt. nickel(II) o-benzoylbenzoate, trihydrate	150, IP 75
737	compound with 1 f. wt. picric acid and 1/2 f. wt. copper(II) picrate	400, IP 175
736	compound with 1 f. wt. salicylic acid and 1/2 f. wt. cobalt(II) salicylate, monohydrate	> 400, IP 25
734	compound with 1 f. wt. thiocyanic acid and 1/2 f. wt. cobalt(II) thiocyanate	100, IP 100
544	compound with 1 f. wt. of zinc salicylate	IP 100
744	compound with 1/2 f. wt. zinc thiocyanate	200, IP 60
543	compound with 1 f. wt. zinc thiocyanate	IP 100
	NITRILES	
	Unsubstituted	
1175	1,1,3-Indenetripropionitrile	> 500
1171	1,3,5-Pentanetricarbonitrile, 3-phenyl-	> 500
93	Phthalonitrile	60
	Monosubstituted	
	Acids	
1250	Cinnamic acid, α-cyano-	> 500
1628	o-Toluic acid, α-cyano-	> 500
	Ketones	
889	Ketiponitrile, α,δ-diphenyl-	50

* See also Inorganic Compounds

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	NITRILES	
	Monosubstituted	
	Ketones	
1174	Pimelonitrile, γ-acetyl-γ-(2-cyanoethyl)-	> 500
	Nitro Compounds	
1173	1,3,5-Pentanetricarbonitrile, 3-(p-nitrophenyl)-	> 500
1172	Pimelonitrile, γ-acetyl-γ-(2-cyanoethyl)-	> 500
	Miscellaneous	
1082	Acetonitrile, bromophenyl-	100
1646	1-Aziridinepropionitrile	100
191	Benzamide, o-cyano-	IP > 500
989	Benzonitrile, 2,6-dimethoxy-	> 500
1220	Glycinonitrile, N-methylene-	> 500
1170	Glyoxime, dimethyl-, O,O'-bis(2-cyanoethyl) ether	> 500
X2339	Guanidine, 1-butyl-3-cyano-	> 100
1181	-----, cyano-	> 500
X2340	-----, 1,1-dibutyl-3-cyano-	> 100
1652	Propionitrile, β,β'-(ethylenedithio)di-	> 500
	Polysubstituted	
963	Benzonitrile, 2-methoxy-6-nitro-	500
1064	Nicotinonitrile, 1,2-dihydro-4,6-dimethyl-2-oxo-	> 500
1066	-----, 1,2-dihydro-6-hydroxy-1,4-dimethyl-2-oxo-	> 500
170, 1065	-----, 1,2-dihydro-1,4,6-trimethyl-2-oxo-	> 500, IP 250
918	Ricinine	75
920	Valeramide, δ-cyano-β,γ-dioxo-α,δ-diphenyl-	> 500
	NITRO COMPOUNDS	
	Unsubstituted	
1671	Benzene, (2-nitropropenyl)-	> 500,
R1364	Propane, 1-nitro-	1000
R1365	-----, 2-nitro-	500
926	Toluene, 2,4-dinitro-	> 500
	Monosubstituted	
	Acids	
1700	Acetic acid, (2,4-dinitrophenyl)-	> 500
1660	-----, (p-nitrophenyl)-	> 500
	Amides	
746	Acetanilide, p-nitro-	IP 500
1269	p-Acetotoluidide, 2,3(and 2,5)-dinitro-	> 500
1006	Benzanilide, 3'-nitro-	> 500
	Amines	
1085	Aniline, N,N-dimethyl-p-nitro-	> 500
569	-----, 2,4-dinitro-	IP 250
443	-----, p-nitro-, mercury(II) deriv.	500, IP 500
1208	Diphenylamine, 2,2',4,4',6,6'-hexanitro-	> 500
1270	p-Toluidine, 3,5-dinitro-	> 500

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	NITRO COMPOUNDS	
	Monosubstituted	
	Arsenic Compounds	
1657	Benzenearsonic acid, m-nitro-	300
1434	-----, o-nitro-	100
1441	-----, p-nitro-	100
	Esters	
204	Lauric acid, 4,6-dinitro-o-tolyl ester	IP > 500
206	Palmitic acid, 4,6-dinitro-o-tolyl ester	500, IP 250
	Ethers	
915	Anisole, 2,4-dinitro-	100
916	-----, 2,4,6-trinitro-	> 500
1146	Phenetole, 2,4-dinitro-	250
	Halides	
997	Benzene, 1-chloro-2,4-dinitro-	> 500
1249	-----, x,x-dichloro-x,x-dinitro- and Benzene, x,x-dichloro-x-nitro-	> 500
1120	-----, 1,5-dichloro-2,3-dinitro-	> 500
1144	-----, 1-fluoro-2,4-dinitro-	50
1115	-----, 1-fluoro-4-nitro-	250
1299	Ethane, 1,1,1-trichloro-2,2-bis(4-chloro-x-nitrophenyl)-	> 1000
	Heterocyclic Compounds	
1662	Benzimidazole, 6-nitro-	500
1698	Dibenzofuran, 3-nitro-	> 500
1465	Furan, 2-(2-nitrovinyl)-	250
1278	Morpholine, 4-(o-nitrophenyl)-	> 500
	Ketones	
1108	Anthraquinone, 2-methyl-1-nitro-	> 500
1695	Chalcone, 3-nitro-	> 500
1694	3-Pentadienone, 1,5-bis(m-nitrophenyl)-	> 500
	Nitriles	
1173	1,3,5-Pentanetricarbonitrile, 3-(p-nitrophenyl)-	> 500
1172	Pimelonitrile, γ-acetyl-γ-(2-cyanoethyl)-	> 500
	Phenols	
1246	o-Cresol, 4,6-dinitro-	100, IP 50
921	barium deriv.	100
714	sodium deriv.	50, IP 25
1244	Phenol, 2-sec-butyl-4,6-dinitro-	100
925	-----, 2-cyclohexyl-4,6-dinitro-	250
249	-----, p-nitro-, aluminum deriv.	IP 250
248	barium deriv.	500, IP 100
243	calcium deriv.	IP 250
260	chromium(III) deriv.	> 1000, IP > 500
261	iron(III) deriv.	IP 250
242	lead(II) deriv.	IP > 500
247	magnesium deriv.	IP 250
244	manganese(II) deriv.	500, IP 100
259	mercury(II) deriv.	> 500, IP 50
257	tin(II) deriv.	IP 250
258	tin(IV) deriv.	250, IP 100
245	zinc deriv.	250, IP 250

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	NITRO COMPOUNDS	
	Monosubstituted	
	Phenols	
1147	Thymol, 2,6-dinitro-	100
	Sulfonic Acid Esters	
179	p-Toluenesulfonic acid, m-nitrophenyl ester	IP > 500
178	o-nitrophenyl ester	IP > 1000
180	p-nitrophenyl ester	IP > 500
	Miscellaneous	
1003	Benzenesulfonamide, p-nitro-	500
1000, 1086	Benzenethiol, 2,4-dinitro-	200, 500
560	Carbamic acid, dithio-, 2,4-dinitrophenyl ester	IP > 500
439	Carbanilide, 4,4'-dinitrothio-	IP > 500
1148	Hydrazine, (2,4-dinitrophenyl)-	> 500
	Mercury compound.	
321	o-nitrophenyl ----- acetate	100, IP 25
X2310	Parathion	2.5
437	Selenocyanic acid, p-nitrophenyl ester	IP 50
1117	Sulfide, bis(2,4-dinitrophenyl)	> 500
1119	Sulfone, bis(2,4-dinitrophenyl)	> 500
1069	Sulfoxide, bis(p-nitrophenyl)	> 500
1279	Thiocyanic acid, 2,4-dinitrophenyl ester	
	Polysubstituted	
	Amine-Halides	
1271	Aniline, 2-bromo-4-nitro-	> 500
1272	-----, 4-bromo-2-nitro-	> 500
1273	p-Toluidine, N-(5-chloro-2,4-dinitrophenyl)-	> 500
	Amine-Mercury Compounds	
451	Aniline, 2-(acetoxymercuri)-4-nitro-	IP 250
442	and Aniline, 2,6-bis(acetoxymercuri)-4-nitro-	250, IP 50
452	-----, 2,6-bis(acetoxymercuri)-4-nitro-	100, IP 25
449	-----, 2,6-bis(hydroxymercuri)-4-nitro-	IP 250
446	-----, 2-(hydroxymercuri)-4-nitro-	250, IP 50
453	-----, 2,2'-mercuribis[6-acetoxymercuri-4-nitro-	IP 250
448	-----, 2,2'-mercuribis[4-nitro-	IP > 500
	Azo-Phenols	
1214	1-Naphthol, 4-(p-nitrophenylazo)-	> 500
1211	Orcinol, 6-(p-nitrophenylazo)-	> 500
1212	Resorcinol, 4-(p-nitrophenylazo)-	> 500
	Halide-Phenols	
1268	Phenol, 2-chloro-4,6-dinitro-	500
1248	-----, 2-chloro-4-nitro-	100
1289	sodium salt	100
1118	-----, 2,4-dichloro-6-nitro-	100
1311	sodium salt	50
	Halide-Sulfides	
1680	Disulfide, bis(4-chloro-2-nitrophenyl)	> 500
1275	Sulfide, bis(2-chloro-4-nitrophenyl)	> 500
1116	-----, bis(2,4-dichloro-6-nitrophenyl)	> 500

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	NITRO COMPOUNDS	
	Polysubstituted	
	Halide-Sulfides	
1485	Sulfide, 2-chloroethyl o-nitrophenyl	> 500
1484	-----, 2-chloroethyl p-nitrophenyl	> 500
	Miscellaneous	
447	Acetanilide, 2-(acetoxymercuri)-4-nitro-	IP 500
445	-----, 2,6-bis(acetoxymercuri)-4-nitro-	IP 500
441	Acetic acid, (p-nitrophenylselenyl)-	IP 250
181	Benzenesulfonic acid, p-bromo-, p-nitrophenyl ester	IP > 500
963	Benzonitrile, 2-methoxy-6-nitro-	500
990	2,5-Cyclohexadien-1-one, 2-(hydroxymercuri)-4-isonitro-6-nitro-, 2,4-anhydride	250
759	Meleimide, N-(o-nitrophenyl)-	> 1000, IP 250
964	Phenol, 2-(chloromercuri)-4,6-dinitro-	500
586	Phenoselenazine, 3-(p-nitroanilino)-	IP > 500
1161	Picrolonic acid	> 500
1644	Sulfone, 2-chloroethyl p-nitrophenyl	> 500
	NITROSO COMPOUNDS	
	Unsubstituted	
1166	Benzene, o-dinitroso-	250
	Substituted	
1217	Cupferron	250
1139	1-Naphthol, 2-nitroso-	> 500
1180	-----, 4-nitroso-	> 500
1137	2-Naphthol, 1-nitroso-	500
1659	Neocupferron	500
1237	Resorcinol, 2,4-dinitroso-	> 500
	OSAZONES	
	See Hydrazine Derivatives	
	OXIMES	
	See Hydroxylamine Derivatives	
	OXONIUM COMPOUNDS	
1225	Gallocyanine	> 500
1210	Rhodamine B	500
	PEROXIDES	
1145	Ascaridole	250
	PHENOLS	
	Unsubstituted	
1176	1,2-Naphthalenediol, monohydrate	100
1142	1,4-Naphthalenediol	100

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	PHENOLS	
	Unsubstituted	
1110	p-Toluhydroquinone	500
1030	2,5-Xylenol	250
1031	3,4-Xylenol	500
	Monosubstituted	
	Amines	
854	3,5-Xylenol, 4-amino-	> 500
1708	2,5-Xylohydroquinone, α^2,α^5-bis(dimethylamino)-	> 500
	Halides	
1264	o-Cresol, 3,4,5,6-tetrabromo-	> 500
1267	Phenol, 3,5-dibromo-2,4,6-trichloro-	> 500
1245	-----, pentachloro-	250
1265	-----, 2,4,6-tribromo-	> 500
215	Resorcinol, tetrachloro-	IP 100
	Hydroxylamine Derivatives	
1113	β-Resorcylaldehyde, oxime	500
929	Salicylaldehyde, oxime	400
	Ketones	
1233	Acetophenone, 2,4-dihydroxy-	> 500
941	Propiophenone, p-hydroxy-	> 500
1209	Quinalizarin	> 500
	Mercury Compounds	
219	Phenol, o-(chloromercuri)-	100, IP 25
229	-----, p-(chloromercuri)-	> 500, IP 50
235	-----, o-(hydroxymercuri)-	100, IP 25
	Nitro Compounds	
1246	o-Cresol, 4,6-dinitro-	100, IP 50
921	barium deriv.	100
714	sodium deriv.	50, IP 25
1244	Phenol, 2-sec-butyl-4,6-dinitro-	100
925	-----, 2-cyclohexyl-4,6-dinitro-	250
249	-----, p-nitro-, aluminum deriv.	IP 250
248	barium deriv.	500, IP 100
243	calcium deriv.	IP 250
260	chromium(III) deriv.	> 1000, IP > 500
261	iron(III) deriv.	IP 250
242	lead(II) deriv.	IP > 500
247	magnesium deriv.	IP 250
244	manganese(II) deriv.	500, IP 100
259	mercury(II) deriv.	> 500, IP 50
257	tin(II) deriv.	IP 250
258	tin(IV) deriv.	250, IP 100
245	zinc deriv.	250, IP 250
1147	Thymol, 2,6-dinitro-	100
	Nitroso Compounds	
1139	1-Naphthol, 2-nitroso-	> 500
1180	-----, 4-nitroso-	> 500
1137	2-Naphthol, 1-nitroso-	500
1237	Resorcinol, 2,4-dinitroso-	> 500

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	PHENOLS	
	Monosubstituted	
	Thiosemicarbazones	
R1770	Benzaldehyde, p-hydroxy-, thiosemicarbazone	> 500
R2088	Salicylaldehyde, 4-phenyl-3-thiosemicarbazone	> 1000
R1752	thiosemicarbazone	> 500
	Miscellaneous	
	Ammonium compound.	
1536	diethyl(m-hydroxyphenyl)methyl ----- chloride	> 500
1665	Benzenearsonic acid, p-hydroxy-	> 600
558	2'-Flavanol, 2,4,4,4',7-pentamethyl-	IP > 500
169	Salicylaldehyde, semicarbazone	IP 500
265	Salicylic acid, lead(II) salt	IP > 500
	Disubstituted	
	Acid-Halides	
1322	Benzoic acid, 4-hydroxy-3,5-diiodo-	> 500
1324	Salicylic acid, 3,5-diiodo-	500
	Azo-Nitro Compounds	
1214	1-Naphthol, 4-(p-nitrophenylazo)-	> 500
1211	Orcinol, 6-(p-nitrophenylazo)-	> 500
1212	Resorcinol, 4-(p-nitrophenylazo)-	> 500
	Halide-Nitro Compounds	
1268	Phenol, 2-chloro-4,6-dinitro-	500
1248	-----, 2-chloro-4-nitro-	100
1289	sodium deriv.	100
1118	-----, 2,4-dichloro-6-nitro-	100
1311	sodium deriv.	50
	Miscellaneous	
912	Arsphenamine	> 500
911	Phenol, 2-amino-4-arsenoso-, hydrochloride	500
964	-----, 2-(chloromercuri)-4,6-dinitro-	500
132	Phenolphthalein	> 1000, IP 500
183	Salicylic acid, 5-amino-, hydrochloride	IP > 500
R1766	Salicylaldehyde, 5-chloro-, thiosemicarbazone	> 500
R1754	Vanillin, thiosemicarbazone	> 500
	PHOSPHORUS COMPOUNDS*	
	Phosphates, ortho-	
X1944	Amyl phosphate, mono-	> 250
X1916	Butyl phosphate, tri-	> 250
X1914	Ethyl phosphate, di-	> 250
X1945	mono-	> 250
X1949	tri-	> 250
X1946	Isopropyl phosphate, mono-	> 250
X1950	Methyl phosphate, mono-	> 250
X1947	Octyl phosphate, mono-	> 250
X1928	Phosphoric acid, dibutyl 2-methylallyl ester	> 250

*See also Inorganic Compounds

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	PHOSPHORUS COMPOUNDS*	
	Phosphates, ortho-	
X1911	Phosphoric acid, tris(2-chloroethyl) ester	> 250
X1912	tris(2-ethylhexyl) ester	> 250
X1913	tris(2-methylallyl) ester	> 250
X1948	Propyl phosphate, mono-	> 250
X1910	x-Tolyl phosphate, tri-	250
	Phosphites	
X1929	Butyl phosphite, di-	> 250
X1943	mono-	> 250
X1927	Ethyl phosphite, tri-	> 250
X1926	Methyl phosphite, tri-	> 250
	Phosphonates	
1470	Acetic acid, phosphono-, triethyl ester	> 500
X1952	Benzenephosphonic acid, p-chloro-, diethyl ester	> 250
X1919	Ethanephosphonic acid, bis(p-chlorophenyl) ester	> 250
X1951	Methanephosphonic acid, trichloro-, diethyl ester	> 250
X1918	2-Propene-1-phosphonic acid, dibutyl ester	> 250
X1917	β-Styrenephosphonic acid, dibutyl ester	> 250
	Phosphonium Compounds	
	Phosphonium compounds.	
1640	triallylphenyl ----- bromide	> 500
1594	triethyl-p-tolyl ----- iodide	500
	Pyrophosphates	
X1925	Butyl pyrophosphate, tetra-	> 250
X2434	Ethyl pyrophosphate, tetra-	2.5
X1471	Isopropyl pyrophosphate, tetra-	5
X5993	Methyl pyrophosphate, tetra-	100
X1924	Propyl pyrophosphate, tetra-	250
X2435	Pyrophosphoric acid, ethyl triisopropyl ester	7.5
X2436	tributyl ethyl ester	50
	Tetraphosphates	
X1036	Butyl tetraphosphate, hexa-	> 250
X688, X2433	Ethyl tetraphosphate, hexa-	10, 7.5
X1034	Methyl tetraphosphate, hexa-	50
X1309	Octyl tetraphosphate, hexa-	> 50
X1035	Propyl tetraphosphate, hexa-	> 250
X1923	Tetraphosphoric acid, hexakis(2-ethylhexyl) ester	> 250
X2438	tributyl triethyl ester	50
X2437	triethyl triisopropyl ester	10
	Triphosphates	
X1920	Triphosphoric acid, phenyl tetrapropyl ester	250
X1921	tetrabutyl phenyl ester	250

*See also Inorganic Compounds

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	PHOSPHORUS COMPOUNDS*	
	Miscellaneous	
X1922	Benzenephosphonic acid, monoethyl ester, trianhydride with phosphoric acid	100
1253	Diamidophosphoryl fluoride, tetramethyl-	1
1639	Dibenzofuran, 2-(dicyanophosphino)-	> 500
X2310	Parathion	2.5
1474	Phenoxathiin, 2-(dicyanophosphino)-	50
1473	Phosphine selenide, triphenyl-	> 500
1638	Phosphinimide, tetraphenyl-	500
	PSEUDOTHIOUREAS	
	See Thioureas	
	QUATERNARY NITROGEN COMPOUNDS	
	Ammonium Compounds	
	Ammonium compounds.	
X592	benzyldimethyloctadecyl ----- chloride	> 250
X593	benzylhexadecyldimethyl ----- chloride	> 250
R1366	benzyltrimethyl ----- chloride	250
1672	(carboxymethyl)trimethyl ----- chloride, hydrazide	> 500
1536	diethyl(m-hydroxyphenyl)methyl ----- chloride	> 500
591	(5-hydroxycarvacryl)trimethyl ----- iodide, dimethylcarbamate	> 50 IP 2.5
159	Tetrahydropalmatine, l-	IP > 100
	Cyclic Compounds	
158	Berberine	IP > 500
	Pyridinium compound.	
1673	3-(4-aminosemicarbazido)-1-methyl ----- p-toluenesulfonate	> 500
	3H-Pyrrocolinium compound.	
1472	octahydro-4-(2-hydroxyethyl)-2-methyl ----- chloride, acetate	> 500
166	Sanguinarine, sulfate	IP 500
	QUINONES	
	Unsubstituted	
1107	1,2-Naphthoquinone	250
1138	1,4-Naphthoquinone	100
1111	Phlorone	500
1109	p-Toluquinone	250
	Substituted	
1108	Anthraquinone, 2-methyl-1-nitro-	> 500
1209	Quinalizarin	> 500
1661	p-Quinone, 2,6-dichloro-	500
1693	-----, 2,5-dichloro-3,6-dihydroxy-	> 500

*See also Inorganic Compounds

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	RESINS	
	See Unknown Structures	
	SELENIUM COMPOUNDS*	
702	Acetanilide, α,α'-diselenobis-	50, IP 25
441	Acetic acid, (p-nitrophenylselenyl)-	IP 250
450	-----, selenocyano-, butyl ester	IP 100
1532	potassium salt	100
668, 878	o-Acetotoluidide, α,α'-diselenobis-	25, IP 25
715	Aniline, p,p'-diselenodi-	100, IP 25
585	Arsanilic acid, N-3-phenoselenazinyl-	> 1000, IP 100
381	12H-Benzo[b]phenoselenazine	IP 500
454	-----, 12-acetyl-	IP > 500
527	-----, 12-methyl-, hydriodide	IP > 500
223	Carbamic acid, diethyldithio-, selenium(II) salt	250, IP 50
458	Formaldehyde, seleno-	IP 250
589	Phenoselenazine, 3-anilino-, monohydrochloride	IP > 500
587	-----, 3-(1-naphthylamino)-	IP> 500
586	-----, 3-(p-nitroanilino)-	IP > 500
588	-----, 3-(o-toluidino)-	IP > 500
1473	Phosphine selenide, triphenyl-	> 500
498	Selenide, methyl phenyl	IP > 500
626	Selenocyanic acid, ester with α-hydroxyacetanilide,	25, IP 25
868, 627	ester with α-hydroxy-o-acetotoluidide	100, IP 100
437	p-nitrophenyl ester	IP 50
	SEMICARBAZIDES	
1673	Pyridinium compound. 3-(4-aminosemicarbazido)-1-methyl ----- p-toluenesulfonate	> 500
1323	Semicarbazide, monohydrochloride	> 500
	SEMICARBAZONES	
927	2-Octanone, semicarbazone	> 500
169	Salicylaldehyde, semicarbazone	IP 500
196	o-Veratraldehyde, semicarbazone	IP > 500
	SULFAMATES	
573	Cyclohexanesulfamic acid, barium salt	IP 250
	SULFIDES	
	Monosulfides	
1318	Acetic acid, (2,5-dioxo-3-cyclohexen-1-ylmercapto)-	250
1281	-----, thiodi-	> 500
850	barium salt	500
1189	bis(2-ethylhexyl) ester	> 500
1184	diallyl ester	250
1168	di-2-butenyl ester	> 500
1183	dibutyl ester	> 500
1277	Aniline, p,p'-thiobis[N,N-dimethyl-	> 500
1282	Ethanol, 2,2'-thiodi-	> 500

* See also Inorganic Compounds

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	SULFIDES	
	Monosulfides	
1647	2-Propanol, 1-fluoro-3-propylmercapto-	50
1275	Sulfide, bis(2-chloro-4-nitrophenyl)	> 500
1274	-----, bis(p-chlorophenyl)	> 500
1116	-----, bis(2,4-dichloro-6-nitrophenyl)	> 500
1117	-----, bis(2,4-dinitrophenyl)	> 500
1485	-----, 2-chloroethyl o-nitrophenyl	> 500
1484	-----, 2-chloroethyl p-nitrophenyl	> 500
572	-----, lorol 2-thiazolinyl	IP > 500
1078	Sulfonium compound. (thiodiethylene)bis[bis(2-hydroxyethyl) ----- chloride	250
1436	Thiocyanic acid, diester with 2,2'-thiodiethanol	250
	Disulfides	
1276	Aniline, p,p'-dithiobis[N,N-dimethyl-	> 500
1681	Benzothiazole, 2,2'-dithiobis-	> 500
1680	Disulfide, bis(4-chloro-2-nitrophenyl)	> 500
1490	-----, bis(2,2'-dichloroisopropyl)	> 500
1652	Propionitrile, β,β'-(ethylenedithio)di-	> 500
	SULFONAMIDES	
	Unsubstituted	
1013	Benzenesulfonamide, N-benzyl-	> 500
1010	-----, N-sec-butyl-	> 500
1009	-----, N-ethyl-	500
1011	-----, N,N'-ethylenebis-	> 500
1016	m-Benzenesulfonotoluidide	> 500
1015	o-Benzenesulfonotoluidide	> 500
1026	p-Toluenesulfonamide, N-benzyl-	> 500
1021	-----, N-sec-butyl-	> 500
1023	-----, N-cyclohexyl-	> 500
1020	-----, N,N-diethyl-	> 500
1025	-----, N,N-diisobutyl-	> 500
1024	-----, N,N'-ethylenebis-	> 500
1018	-----, N-isobutyl-	> 500
1019	-----, N-propyl-	> 500
1029	p-Toluenesulfonanilide, N-ethyl-	> 500
1028	p-Toluenesulfono-m-toluidide	> 500
1027	p-Toluenesulfono-o-toluidide	> 500
	Substituted	
	Halides	
1055	Benzenesulfonamide, p-bromo-N,N-dimethyl-	500
198	-----, p-bromo-N-ethyl-	IP 250
200, 945	-----, p-bromo-N-isobutyl-	> 500, IP > 500
199	-----, p-bromo-N-propyl-	IP 500
1053	-----, N-butyl-p-chloro-	> 500
930	-----, p-chloro-	500
1054	-----, p-chloro-N-propyl-	500
1056	Benzenesulfonanilide, 4,4'-dibromo-	> 500
946	p-Benzenesulfonotoluidide, 4-bromo-	> 500

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	SULFONAMIDES	
	Substituted	
	Heterocyclic Compounds	
1014	Morpholine, 4-(phenylsulfonyl)-	> 500
1017	-----, 4-(p-tolylsulfonyl)-	> 500
1012	Piperidine, 1-(phenylsulfonyl)-	> 500
1022	-----, 1-(p-tolylsulfonyl)-	> 500
	Miscellaneous	
1697	Benzenesulfonamide, N-hydroxy-	500
1003	-----, p-nitro-	> 500
947	p-Benzenesulfonanisidide, 4-bromo-	IP > 500
754	1,2-Benzisothiazol-3(2H)-one, 2-benzyl-, 1,1-dioxide	IP > 500
213	Piperidine, 1-(p-bromophenylsulfonyl)-	IP > 500
562	Sulfanilide	
	SULFONES	
	Unsubstituted	
1654	Ethane, 1,2-bis(isopropylsulfonyl)-	> 500
1655	Sulfone, benzyl decyl	> 500
1651	-----, benzyl phenyl	> 500
1650	-----, butyl dodecyl	> 500
1653	-----, phenyl p-tolyl	> 500
	Substituted	
1119	Sulfone, bis(2,4-dinitrophenyl)	> 500
1644	-----, 2-chloroethyl p-nitrophenyl	> 500
	SULFONIC ACIDS	
1200	Benzenesulfonic acid, p-(3-guanylguanidino)-	> 500
1733	Hydrazinesulfonic acid, 2-(p-dimethylaminophenyl)-, sodium salt	100
1673	Pyridinium compound. 3-(4-aminosemicarbazido)-1-methyl ----- p-toluenesulfonate	> 500
1162	5-Quinolinesulfonic acid, 8-hydroxy-7-iodo-	> 500
1240	Titan yellow	> 500
	SULFONIC ACID ESTERS	
	Unsubstituted	
1067	p-Toluenesulfonic acid, methyl ester	1000
	Substituted	
181	Benzenesulfonic acid, p-bromo-, p-nitrophenyl ester	IP > 500
179	p-Toluenesulfonic acid, m-nitrophenyl ester	IP > 500
178	o-nitrophenyl ester	IP > 1000
180	p-nitrophenyl ester	IP > 500

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	SULFONIUM COMPOUNDS	
	Sulfonium compound.	
1078	(thiodiethylene)bis[bis(2-hydroxyethyl) ----- chloride]	250
	SULFONYL HALIDES	
1143	p-Toluenesulfonyl fluoride	500
	SULFOXIDES	
1069	Sulfoxide, bis(p-nitrophenyl)	> 500
1641	-----, 2-chloroethyl vinyl	100
1642	Vinyl sulfoxide	100
	THALLIUM COMPOUNDS*	
1737	Acetic acid, fluoro-, thallium(I) salt	10
1633	Ethyl alcohol, thallium(I) deriv.	50
1460	2,4-Pentanedione, dimethylthallium deriv.	> 500
1635	Thallium, (ethylmercapto)dimethyl-	> 500
	Thallium compound.	
1637	dimethyl ----- diethyldithiocarbamate	> 500
1480	m-Toluic acid, α,α,α-trifluoro-, thallium(I) salt	50
	THIOAMIDES	
X804	Acetamide, thio-	> 250
994	Oxamide, dithio-	500
	THIOCARBAMATES	
	Unsubstituted	
1684	2-Benzoxazolethiol	> 500
383	Carbamic acid, dibutyldithio-, copper(II) salt	> 1000, IP 250
332	-----, diethyldithio-, aluminum salt	IP > 500
328	chromium(III) salt	IP > 500
333	copper(II) salt	> 1000, IP 250
331	iron(III) salt	IP > 500
325	lead(II) salt	IP 500
326	mercury(II) salt	> 1000, IP 100
334	tin(II) salt	IP 250
324	zinc salt	> 1000, IP 100
379	-----, dimethyldithio-, aluminum salt	IP > 500
378	chromium(III) salt	IP > 500
380	copper(II) salt	> 500, IP 25
246	iron(III) salt	IP > 500
561	Carbanilic acid, dithio-, copper(II) salt	IP > 500
572	Sulfide, lorol 2-thiazolinyl	IP > 500
	Thallium compound.	
1637	dimethyl ----- diethyldithiocarbamate	> 500
1688	2-Thiazolethiol, 4-phenyl-	> 500
	Substituted	
1682	Benzothiazole, 6-amino-2-mercapto-	> 500

*See also Inorganic Compounds

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	THIOCARBAMATES	
	Substituted	
560	Carbamic acid, dithio-, 2,4-dinitrophenyl ester	IP > 500
1215	Rhodanine, 5-(p-dimethylaminobenzylidene)-	> 500
	THIOCARBOHYDRAZIDES	
1236	Carbohydrazide, 1,5-diphenyl-3-thio-	> 500
1178	-----, thio-	10
	THIOCARBOHYDRAZONES	
1179	Benzaldehyde, thiocarbohydrazone	> 500
	THIOCARBONATES	
1599	Carbonic acid, trithio-, dimethyl ester	500
227	Xanthic acid, ethyl-, copper(II) salt	IP > 500
	THIOCYANATES	
1437	Thiocyanic acid, diester with 2,2'-(ethylimino)diethanol	100
1436	diester with 2,2'-thiodiethanol	250
1467	ester with 2,2'-(methylimino)diethanol, hydrochloride	50
1279	2,4-dinitrophenyl ester	> 500
1348	2-pyridyl ester	500
	THIOLS	
	Unsubstituted	
1635	Thallium, (ethylmercapto)dimethyl-	> 500
893	Toluene-3,4-dithiol, tin(II) deriv.	> 500
	Substituted	
1280	Acetic acid, mercapto-	250
894	o-Benzenedithiol, 4-chloro-, tin(II) deriv.	> 500
1086, 1000	Benzenethiol, 2,4-dinitro-	200, 500
1682	Benzothiazole, 6-amino-2-mercapto-	> 500
1684	2-Benzoxazolethiol	> 500
1688	2-Thiazolethiol, 4-phenyl-	> 500
1658	4-Thiazoline-2-thiol	500
	THIOSEMICARBAZIDES	
	Unsubstituted	
R1772	Semicarbazide, 4-allyl-1-phenyl-3-thio-	> 500
1087	-----, 1-phenyl-3-thio-	400
1112	-----, 4-phenyl-3-thio-	50
995	-----, thio-	15
1156	monohydrochloride	10
1136	-----, 3-thio-4-p-tolyl-	250
	Substituted	
1163	Dithizone	> 500

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	THIOSEMICARBAZONES	
	Unsubstituted	
R2092	Acetaldehyde, thiosemicarbazone	75
1134	Acetone, 4-phenyl-3-thiosemicarbazone	250
1159	thiosemicarbazone	10
R1762	Acetophenone, thiosemicarbazone	15
1133	Benzaldehyde, 4-phenyl-3-thiosemicarbazone	> 500
1158	thiosemicarbazone	500
1135	3-thio-4-p-tolylsemicarbazone	> 500
R2091	2-Butanone, 4-phenyl-3-thiosemicarbazone	250
R1916	Butyraldehyde, thiosemicarbazone	250
R1602	Caproaldehyde, β,δ,δ-trimethyl-, thiosemicarbazone	100
R2093	Crotonaldehyde, thiosemicarbazone	250
R1601	Enanthaldehyde, thiosemicarbazone	> 100
R2090	Isovaleraldehyde, thiosemicarbazone	50
R1915	Propionaldehyde, thiosemicarbazone	50
	Substituted	
R1753	Anisaldehyde, thiosemicarbazone	> 500
R1756	Benzaldehyde, p-chloro-, thiosemicarbazone	> 500
R1765	-----, p-dimethylamino-, thiosemicarbazone	> 250
R1770	-----, p-hydroxy-, thiosemicarbaozne	> 500
R1768	Glucose, thiosemicarbazone	> 500
R1157	D-, thiosemicarbazone	> 500
R1755	Piperonal, thiosemicarbazone	> 500
R2088	Salicylaldehyde, 4-phenyl-3-thiosemicarbazone	> 1000
R1752	thiosemicarbazone	> 500
R1766	-----, 5-chloro-, thiosemicarbazone	> 500
R1603	2-Thiophenecarboxaldehyde, thiosemicarbazone	> 500
R1754	Vanillin, thiosemicarbazone	> 500
	THIOUREAS	
	Unsubstituted	
438	Carbanilide, thio-	> 1000
1687	Thiazole, 2-amino-4-(4-biphenylyl)-	> 500
1686	-----, 2-amino-4-methyl-, monohydrochloride	> 500
X5996	Thiosinamine	IP > 500
X2079	Urea, 1-allyl-2-thio-3-o-tolyl-	> 250
X2077	-----, 1-allyl-2-thio-3-p-tolyl-	> 250
567	-----, 1,1'-(4,4'-biphenylene)bis[3-allyl-2-thio-	IP > 500
844	-----, 1-(2-biphenylyl)-2-thio-	10
845	-----, 1-(4-biphenylyl)-2-thio-	> 500
876	-----, 1-cyclohexyl-2-thio-	500
899	-----, 1-ethyl-2-thio-1-o-tolyl-	500
849	-----, 1,1'-hexamethylenebis[2-thio-	> 500
856	-----, 1-(1-naphthyl)-2-thio-	10
846	-----, 1-(2-naphthyl)-2-thio-	100
574	-----, 1,1'-m-phenylenebis[2-thio-	IP > 500
863	-----, 1,1'-p-phenylenebis[2-thio-	> 500
749	-----, 1-phenyl-2-thio-	IP 100
897	-----, thio-	100
886	-----, 2-thio-1-m-tolyl-	50
904	-----, 2-thio-1-m(o and p)-tolyl-	5
762	-----, 2-thio-1-o-tolyl-	5
867	-----, 2-thio-1-p-tolyl-	5

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	THIOUREAS	
	Unsubstituted	
870	Urea, 2-thio-1-(2,4-xylyl)-	5
885	-----, 2-thio-1-(2,5-xylyl)-	50
	Substituted	
	Ethers	> 500
862	Carbanilide, 2,2'-diethoxythio-	100
853	Urea, 1-(o-methoxyphenyl)-2-thio-	25
896	-----, 1-(p-methoxyphenyl)-2-thio-	> 500
859	-----, 1-o-phenetyl-2-thio-	500
860	-----, 1-p-phenetyl-2-thio-	
	Halides	> 250
X2078	Urea, 1,3-bis(a,a,a,-trichloro-m-tolyl)-2-thio-	50
895	-----, 1-(p-bromophenyl)-2-thio-	250
858	-----, 1-(m-chlorophenyl)-2-thio-	15
857	-----, 1-(o-chlorophenyl)-2-thio-	15
869	-----, 1-(p-chlorophenyl)-2-thio-	5
902	-----, 1-(3-chloro-o-tolyl)-2-thio-	10
992	-----, 1-(4-chloro-o-tolyl)-2-thio-	500
843	-----, 1-(2,5-dichlorophenyl)-2-thio-	
	Miscellaneous	> 500
907	Barbituric acid, 2-thio-	> 500
1044	Benzoic acid, o-thioureido-	> 500
1185	Biurea, dithio-	100
1795	Biuret, dithio-	> 500
919	-----, 2,4-dithio-1-o-tolyl-	IP > 500
439	Carbanilide, 4,4'-dinitrothio-	> 500
903	Urea, 1-(p-benzoylphenyl)-2-thio-	500
898	-----, 1-(5-chloro-2-methoxyphenyl)-2-thio-	> 500
1177	-----, 1-guanyl-2-thio-	
	THORIUM COMPOUNDS	
1325	1-Naphthalenearsonic acid, thorium(X) salt	> 500
	TIN COMPOUNDS	
894	o-Benzenedithiol, 4-chloro-, tin(II) deriv.	> 500
334	Carbamic acid, diethyldithio-, tin(II) salt	IP 250
257	Phenol, p-nitro-, tin(II) deriv.	IP 250
258	tin(IV) deriv.	250, IP 100
	Tin compounds.	500, IP 100
575	triphenyl ----- hydroxide	> 500, IP 100
576	triphenyl ----- thiocyanate	> 500
893	Toluene-3,4-dithiol, tin(II) deriv.	
	TRIAZENES	
1240	Titan yellow	> 500
	UNKNOWN STRUCTURES	
163	Bicuculline	IP 25
1471	1,10-Decanediamine, N,N,N',N'-tetramethyl-, dihydrobromide, polymer with p,p'-methylenediphenol	150

TABLE I

Code No.	Classification and Name	Min. LD mg/kg
	UNKNOWN STRUCTURES	
157	Integerrimine	IP 250
165	Retrorsine	IP > 500
1072, 914	Ricin	100, 500
917	Veratrine	25
	UREAS	
	Unsubstituted	
1398	Urea, allyl-	250
1396	-----, amyl-	> 500
1399	-----, butyl-	> 500
1394	-----, ethyl-	> 250
1400	-----, isobutyl-	> 500
1402	-----, isopropyl-	> 500
1393	-----, methyl-	500
1395	-----, octyl-	> 500
1401	-----, propyl-	> 500
	Substituted	
1062	Alloxan, monohydrate	> 500
1392	Urea, acetyl-	500
1391	-----, benzoyl-	> 500
1224	-----, guanyl-	> 500
1004	Xanthine, 3-methyl-	> 500
	XANTHATES	
	See Thiocarbonates	
	ZINC COMPOUNDS*	
324	Carbamic acid, diethyldithio-, zinc salt	> 1000, IP 100
544	Nicotine, compound with 1 f. wt. zinc salicylate	IP 100
744	compound with 1/2 f. wt. zinc thiocyanate	200, IP 60
543	compound with 1 f. wt. zinc thiocyanate	IP 100
245	Phenol, p-nitro-, zinc deriv.	250, IP 250

* See also Inorganic Compounds

RELATIONSHIP BETWEEN CHEMICAL STRUCTURE AND RAT REPELLENCY*

INTRODUCTION

The importance or necessity of procedures for the control of the economic destruction by rodents is generally accepted. Various methods have been employed for this purpose, such as the attempted rodent proofing of buildings, the use of traps, poison gases, oral toxicants, and natural enemies, such as dogs and cats. Although the methods designed to exterminate the rodents appear to be the most desirable, it is sometimes impossible or impractical to utilize such procedures for the protection of materials in temporary storage dumps. In such cases, the incorporation of an effective repellent in the protective barrier might prove highly advantageous. Such a repellent material should be non-hazardous in end use form, stable under varied storage conditions for a considerable period of time, and capable of ready application during fabrication.

In search for such a repellent material, this laboratory has examined more than 2700** materials, chiefly organic compounds, by a food-acceptance technic. Although the results obtained through this procedure may or may not parallel those obtained in barrier studies involving the preparation of impregnated papers, it offers a number of advantages. It is rapid, does not require extensive facilities or laborious preconditioning of the experimental animals, requires relatively small quantities of the repellent materials, and permits ready evaluation of the effects of variations in structure or composition of the test compounds. Its primary function is to serve as a screening process for the elimination of ineffective materials. It may be pointed out, therefore, that while the results reported in this paper are valid under the experimental feeding conditions, the merits of these same repellents when applied to packaging materials must be determined under field conditions before definite conclusions are reached.

* The work described in this paper was carried out under grants from the Quartermaster Corps.

** Many of these materials were synthesized in this laboratory, or were purchased from laboratory supply houses, while others were obtained through the cooperation of a number of chemical manufacturers and other government agencies. The cooperation of the following organizations is gratefully acknowledged: National Research Council (Chemical-Biological Coordination Center), Eastern Regional Laboratory (U. S. Department of Agriculture), Bureau of Entomology and Plant Quarantine (U. S. Department of Agriculture), American Cyanamid Company, Atlas Powder Company, American Research Associates, Inc., J. T. Baker Chemical Company, Connecticut Hard Rubber Company, Commercial Solvents Corporation, Canadian Copper Refiners, Ltd., Carbide and Carbon Chemicals Corporation, Darsyn Laboratories, E. I. DuPont de Nemours and Company, Fairmount Chemical Company, Ferro Chemical Corporation, B. F. Goodrich Chemical Company, Sindar Corporation, Hercules Powder Company, Heyden Chemical Corporation, Hooker Electrochemical Corporation, Halogen Chemicals, Inc., Kilgore Development Corporation, Pittsburgh Plate Glass Company, Nuodex Products Company, Ohio-Apex, Rhodes Chemical Corporation, Rohm and Haas Company, Sharples Chemical Company, Standard Oil Company, Shell Development Company, Victor Chemical Works, Velsicol Corporation, Wyandotte Chemical Corporation, B. L. Lemke and Company, Merck and Company, Monsanto Chemical Company, Onyx Oil and Chemical Company.

EXPERIMENTAL METHODS

Bioassay procedure. The materials were tested according to the method described in a previous publication (1). Individually caged laboratory rats were given two food cups, one containing 20 grams of a standard laboratory diet, and the other containing similar food to which the test material had been added in an amount equal to 2% of the total weight of 20 grams. Water was supplied ad libitum, and food consumption was determined daily during the test period of four days. At the close of the experiment, the degree of repellency of the test material, expressed as the index number K, was calculated by the formula:

$$K = 100 - 1/100W\ (8T_1 + 4T_2 + 2T_3 + T_4)(U_1 + U_2 + 2U_3 + 4U_4 + 8X),$$

where W equals the body weight of the animal (in kilograms), T_1 -- T_4 represents the consumption (in grams) of the treated food on the first through the fourth day of the test, U_1 -- U_4 represents the consumption of the untreated food, and X represents the residue of untreated food at the conclusion of the experiment. Materials with a K value of 85 or higher were reserved for further study, while those with lower values were not considered as offering promise as rodent repellents.

RESULTS

The repellency indices given in Table I are the results obtained in initial tests upon the first 2700 materials screened for repellent activity. The code numbers are the inventory numbers of the Patuxent Research Refuge repellency file. The compounds are classified according to the various functional groups present. As a result, many compounds appear more than once, being listed under each category represented in the compound. The main headings are arranged alphabetically and further breakdown is made according to additional substituent groups. In classifications containing large numbers of compounds, mono-substituted materials are separated from those containing two or more additional substituents. In cases where the number of compounds of a single type is sufficient to warrant such a division, the compounds are grouped according to the type of substituent present. Nomenclature of compounds is according to the method employed by Chemical Abstracts.

In some cases, a compound is listed under several code numbers, and with several repellency index values. Such compounds represent purportedly replicate samples received from different sources or from different batches. Discrepancies in K values may be due to variations in purity of the product. An asterisk following a K value indicates that the material possesses a significant degree of repellent activity. The letter 'T' following a K value, or in place of it, indicates that the compound was toxic under the conditions of test. The word 'waste' in place of an index value indicates that the animals wasted so much food that valid results could not be obtained.

DISCUSSION

For the purposes of this discussion, a repellent compound is defined as one which gave a repellency index of not less than 85 when tested by the prescribed procedure. No attempt will be made to determine physiological mechanisms affected by these repellents, but it is assumed that activity is associated primarily with specific functional groups ($-NH_2$, $-NO_2$, -COOH, etc.,) attached to alkyl, aryl or heterocyclic nuclei. As a corollary proposition, it is assumed that the activity of any functional group may be augmented or negated by the presence of other groups, or by unsaturation, spatial configuration or molecular weight of the nucleus.

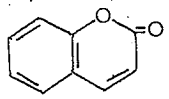
A summation of the data in Table I shows that 596 compounds, or 22 percent of all materials listed, can be classified as repellent. Of these active materials, only 2.3 percent did not contain some element other than carbon, hydrogen and oxygen; 80 percent contained nitrogen; 37 percent contained halogen; 21 percent contained sulfur; and only 5.5 percent failed to contain one or more of these three elements.

On the basis of elementary composition, it is apparent that the functional groups: -OH, -CHO, =CO, -COOH, R-O-R, and -C(O)OR are not repellent under the test conditions, and that repellent compounds containing these groups may derive their activity from some other characteristics. Discussion of acids, alcohols, ethers, etc., will be limited to the more active compounds.

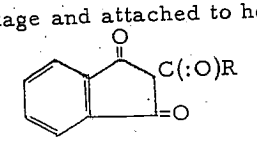
Fifteen compounds containing C, H and O met the minimum standards for repellent activity. They included 2 aliphatic esters, 1 acid, 3 ketones, 5 phenols and 2 heterocyclic compounds. The active materials were:

Code No.	Compound	K value
964	Adipic acid, diallyl ester	91.5
2698	Maleic acid, 1-(2-ethoxycarbethoxy)ethyl 2-ethoxyethyl ester	89.2
2625	Terpinol, diacetate	87
1111	1,2H-Benzopyran-3-carboxylic acid, 2-oxo-	97.1
896	Coumarin	93
885	1,3-Indandione, 2-isovaleryl-	89
217	1,3-Indandione, 2-pivalyl-	94.8
2101	Isosafrole	94.5
873	1-Naphthol	91
845	2-Naphthol, 1,2,3,4-tetrahydro-	88
926	Phenol, x,x-diethyl-o-phenyl-	97
2602	Phenol, p-(α,α-dimethylbenzyl)-	86.6
999	Phenol, p-(1,1,3,3-tetramethylbutyl)-	91
941	Pyrocatechol	85
716	Xanthone	85.6

Both alkyl compounds contain 12 or more carbons, with unsaturated linkages in close proximity to the -C(:O)O- groups. Isosafrole, containing an ethylenic linkage α- to the ring, is repellent, while the isomeric compound safrole (with the unsaturated linkage in the β- position) is relatively inactive. Compounds 1111 and 896 both have the structure:



where a keto group is α- to an ethylenic linkage and attached to heterocyclic oxygen. The indandiones have the structure:



with three keto groups in close proximity. Of the 4 hydroxybenzenes, 2 are substitute in the ortho position, 2 have para substituents, and 1 also contains other substituent groups. Six of the compounds have branched chains, and 5 are unsaturated. The phenols and terpinol diacetate are known to be fungistatic.

The second group to be considered includes the remaining compounds which do not contain nitrogen, sulfur nor halogen. These compounds are:

Code No.	Compound	K value
2360	Succinic acid, alkenyl-, disilver salt	86
2405	Succinic acid, α-alkenyl-, monobutyl ester, sodium salt	99
1228	1,3-Indandione, 2-isovaleryl-, sodium derivative	87.7
1646	Acetic acid, mercury(II) salt	89
2361	2,4-Pentanedione, phenylmercury derivative	86.3
1990	Mercury, ethynylenebis[2-methoxyethyl-	90
1636	Mercury acetate, phenyl-	90
1994	Mercury butyrate, phenyl-	100
1639	Mercury hydroxide, phenyl-	85
1032	Acetoacetic acid, ethyl ester, copper(II) derivative	85

Code No.	Compound	K value
1774	2,4-Pentanedione, copper(II) derivative	100
127	Copper(II) tellurate	91
2149	Sodium fluosilicate	98
1197	Tetrabutyl pyrophosphate	90

This group includes 3 unsaturated compounds, 3 polyketones, 6 compounds containing mercury, and 3 copper compounds. The activity of the mercury and copper compounds again suggests the possibility of relationship between repellency and fungicidal properties. The active ketones all contain the structure: -C(O)-C-C(O)-, with an additional keto group being present in the indandione derivative. Sodium fluosilicate and tetrabutyl pyrophosphate are toxic, and their rejection by the animals may have been influenced by toxicity.

Nitrogen containing compounds constitute the largest category of repellents. In this group, repellency appears to be associated with specific functional groups, and the more active classes will be considered in detail.

Amides

Eight of the 145 amides received repellency indices not less than 85. Since the proportion of repellents is relatively small, it appears that the -C(O)N= group itself is relatively inactive, and that repellency is influenced by other considerations. The active compounds are:

Code No.	Compound	K value
2568	Acetamide, N-(2-naphthyl)-	90.5
892	Acetamide, α-butoxy-N-cyclohexyl-	97.5
2645	Lactamide, N-(1,3-dimethylbutyl)-	87.7
2496	Acetanilide, 2-chloro-4-phenyl-	96.6
1348	Acetanilide, p-diethylamino-	90
1104	Acetanilide, α-selenocyano-	97.8
1502	Isobutyranilide, N-ethyl-	90
1520	Pelargonanilide	86

Five of these compounds are aniline derivatives, one contains a naphthyl group, and three contain branched aliphatic chains. All are N-substituted compounds, and it may be noted that compounds containing unsubstituted $-C(:O)NH_2$ groups usually have very low repellency indices. The activity of No. 2645, as contrasted with that of the isomeric N-hexyl lactamide (No. 2646, K = 14), furnishes additional indication that branched chains contribute to the activity of functional groups. Two of the anilides contain para substituents, and one also contains halogen ortho to the nitrogen group.

Amines

One hundred and eleven unsubstituted amines and derivatives, representing approximately 46 percent of the listed members of this category, were repellent. Many of these repellents were salts or molecular complexes, and it is probable that at least part of the activity was due to the non-amine portion of the molecule. However, 28 out of 61 free amines received indices above 85, and it is apparent that repellency may be associated with the $-NH_2$, -NHR, and $-NR_2$ groups.

Aliphatic amines receiving high repellency indices were: hexyl, dodecyl, hexadecyl, diisohexyl, diheptyl, dioctyl, dinonyl, N,N-dimethyloctadecyl-, trihexyl, a mixture of partially hydrogenated abietyl amines, and a mixture of octadecadienyl and octadecenyl amines. Three polyamines: 3,3'-bis(diisoamylamino)dipropylamine, N,N-diamyl-1,3-propanediamine, and N,N-dioctyl-1,3-propanediamine, also are included in this group. With one exception, all of these compounds contain between 12 and 20 carbon atoms. Further indication of the possible role of branched chains is found in the case of diisohexylamine, which is more active than the n-hexyl isomer. Two of the active compounds were unsaturated.

Repellent cyclic compounds having free amine groups were: 1-naphthylamine, N-phenyl-1-naphthylamine, N-allylaniline, diphenylamine, xenylamine, p-toluidine, 2,4- and 2,5-xylidines, m- and p-phenylenediamines, and toluene-2,4-diamine. m-Phenylenediamine is the first meta substituted compound to show significant repellency, and another compound, containing both meta and ortho substituents, is effective. Two compounds have 1-naphthyl nuclei, and offer additional proof of the activity of this structure. As in other series, the isomeric 2-naphthyl compound is less repellent. One effective compound contains an allyl group, and 7 have substituents ortho or para to the amino group.

Satisfactory results could not be obtained with volatile liquids, and it was necessary to test many amines as salts or addition products. Relatively few amine nitrates, phosphates, or sulfates were repellent, but several acetates, hydrochlorides, and picrates were active. Picric acid itself was not repellent (K = 70), but nearly all amine picrates approached or met the minimum requirements for repellent classification. The acetates and hydrochlorides of some of the longer chain amines were effective, with greatest activity being obtained with compounds containing 12 to 16 carbons:

Amine	Repellency Indices of Salts	
	Acetate	Hydrochloride
Methyl	0	-
Ethyl	4	33
n-Propyl	27	36
Isopropyl	38	65
Amyl	8	23
Decyl	46	89
Dodecyl	91	99
Hexadecyl	93	90
Octadecyl	78	76

In this connection, it should be noted that nearly all salts of dodecylamine were repellent, or had high repellency indices. The available samples of tetradecylamine did not permit preparation of derivatives, and it is possible that its salts would be as active as those of dodecylamine. However, hexylamine salts generally were less active than those of the 12-carbon amine, while those of octadecylamine showed a further decrease in activity. Amine complexes with trinitrobenzene were among the most active compounds tested. Trinitrobenzene itself has a high repellency index, and its molecular complexes with aryl amines were effective at low concentrations in the diet.

Direct comparison of activities of primary, secondary and tertiary amines is not possible as relatively few secondary and tertiary amines were tested. It appears, however, that members of these series have approximately the same activity as primar amines of equivalent molecular weight.

Several other relationships between structure and repellency are indicated in the data from this series. All salts of allylamine were active, while derivatives of saturated 3-carbon amines were not repellent. Likewise, unsaturated C_{18} amines (Nos. 208, 835) were more active than octadecyl amine. This difference in activity furnishes additional indication of the enhancing effect of double bonds. Many substituted aliphatic amines appear slightly less repellent than corresponding unsubstituted compounds, although amines containing hydroxy or halogen groups were quite active. Nitro substituted amines showed surprisingly little activity although addition products with nitro compounds (picric acid, trinitrobenzene and 4,6-dinitro-o-cresol) were highly repellent. Apparently, acidic nitro and basic amino groups on the same nucleus tend to neutralize each other. On the other hand, nitroso amines, either with the nitroso group attached directly to amino nitrogen, or para to it in an aromatic ring, we repellent. As in other series, ortho and para substitution of aryl compounds tended to increase activity of the functional group, while meta substitution was effective only in the case of diamines.

Imides

Six of the 19 imides listed were repellent. One of these active compounds, β-[2-(3,5-dimethyl-2-oxocyclohexyl)-2-hydroxyethyl]glutarimide (No. 2416), is of particular interest, since it proved to be the most repellent material yet examined. Rats refused to drink aqueous solutions containing as little as 1 mg/L., even when no other source of water was available. Diets containing 0.25 or 0.5 percent of the compound were rejected even under conditions of acute starvation. The imide group is assumed to be the most active portion of this molecule, but it is evident that other factors in the structure influence the degree of activity. Other imides were less effective, although N-n-butylphthalimide, N-sec-butylphthalimide, N-hydroxyphthalimide, N-phenylmaleimide, and N-butyl-4-cyclohexene-1,2-dicarboximide showed notable activity.

Nitriles

Only one unsubstituted nitrile, 1-naphthonitrile, received a repellency index above 85, and it appears that the -CN group has little activity. This particular compound is of interest in that it furnishes additional indication of the repellency associated with the 1-naphthyl- structure. Other active nitriles contain amino or guanidino groups, and it is possible that the repellent effects are due to these groups.

Nitro Compounds

Two unsubstituted nitro compounds, 2-nitrophenylbenzene and 1,3,5-trinitrobenzene, were highly repellent, and enough halogen, hydroxy and ether-substituted nitro compounds were sufficiently active to warrant interest in this group. One of the unsubstituted compounds has an ethylenic linkage adjacent to the nitro group, and as with other series, it is probably this situation which enhances the effect of the functional group. Trinitrobenzene itself is highly repellent, and its complexes with various aryl amines are among the most effective materials tested.

Among the nitro-hydroxy compounds giving good repellency indices were: 2,4-dinitrophenol, 3,5-dinitro-o-cresol, 2,6-dinitrothymol, 2-cyclohexyl-4,6-dinitrophenol, and 2-sec-butyl-4,6-dinitrophenol. Examination of these structures shows that in every case, the nitro groups are ortho and para to the hydroxy except where an alkyl group occupies the ortho position. Likewise, the most effective compounds in the ether and halogen sub-groups are the 2,4-dinitro compounds. While it is possible that the repellent activity may be attributed to the toxicity of the 2,4-dinitro configuration, it should be noted that none of the experimental animals ingested lethal amounts during the test period.

Nitroso Compounds

Relatively few compounds containing nitroso groups were tested, but nearly all were classified as repellent. Of the five nitroso-amines, the four active compounds contained structures which have been shown active in other series, and it is possible that the observed repellent effects were due to these structures rather than to the nitroso group. It is of interest that 2-nitroso-1-naphthol was less active than the 2-naphthol compound.

Heterocyclic Nitrogen Compounds

One hundred and twenty-two compounds in this series were classified as repellent. Many of these compounds contained amino, nitro or other groups contributing to activity, but some cyclic structures themselves appeared repellent. These were: acridine, 2-phenylindole, nicotine, quinaldine, quinoline, and 2-stilbazole. Twenty-eight of the active compounds contained picric acid groups, while 16 others contained nitro groups. Eighteen contained quaternary nitrogen, and 36 contained halogen. Six contained unsaturated substituents.

Sulfur Compounds

The sulfur compounds make up a considerable portion of the materials tested,

and include 21 percent of the active repellents. Many types provided a high proportion of effective compounds, others were apparently ineffective. Among the unsubstituted sulfur compounds belonging to the latter category are the sulfonamides, sulfones, sulfonic acids and their esters, thiocarboxylates and thiols. Fourteen sulfides and disulfides were repellent, but the majority of these compounds contained nitrogen or halogen. The apparently effective thioamide was toxic, as were many of the thioureas, and it may be assumed that the apparent effectiveness of such compounds arises from abnormalities in feeding habits of animals following ingestion of a small quantity of toxic material. Thioureas giving high repellency indices are principally 1-allyl-3-R-2-thioureas, ranging from simple 1-allyl thioureas to R = tolyl. A naphthyl group in the 3-position failed to give a repellent compound. Tetramethylthiuram disulfide gave a high repellency index, but other thiuram disulfides were unsuccessful. In fact, tetra-isopropylthiuram disulfide gave a negative value for K.

Similar reduction in activity of a functional group through an increase in molecular weight of alkyl substituents may be noted with the dialkyl dithiocarbamates. Sodium dimethyldithiocarbamate gave a repellency index of 99, while the diethyl compound gave a value of 38. The values for zinc dimethyl-, diethyl- and dibutyl-dithiocarbamates were, respectively, 80, -22, and -36. The repellency also seems to vary inversely with the atomic weight of the metal in this case.

Many thiocyanates, both unsubstituted and substituted, gave high repellency indices. An occasional isothiocyanate gave good results, particularly those containing unsaturated cyclic groups (cyclopentene and fluorene). The three promising sulfonamides are an N-chloro-, and N-dichloro-, and a 3,4-dichloro-N-methylbenzene-sulfonamide. Although the limited number of compounds tested makes any conclusions from this group doubtful, the presence of halogen in the molecule would seem to improve the repellency of sulfonamides.

In heterocyclic compounds containing S in the ring, a distinct parallelism with cycloids containing O can be seen. Three of the promising compounds contain keto groups, and one, thiacoumarin, is the sulfur analog of coumarin which also gave a high repellency index. In the cycloids containing S and O, the addition of a chlorine atom to an ineffective compound increases activity:

Phenothioxin	K = 57
Chlorophenothioxin	K = 89

The repellent thiols are chiefly thioglycollic acid and its salts or mercaptides.

Halides

Although approximately 37 percent of all repellents contained halogen, the majority of these compounds also contained nitrogen, sulfur, or some other element in addition to C, H and O. No unsubstituted bromide gave a high index number, but seven chlorides were repellent. These included 2 biphenyls, the delta isomer of benzene hexachloride, DDT, toxaphene, 1-chloronaphthalene, and octachloropinene. Several of these compounds are known to be toxic to rats, and the apparent repellency may have reflected toxic effects. Two iodonium compounds were repellent, and others in this series gave high indices. In other series, it appears that halogen may augment repellent activity of the functional groups.

SUMMARY

On the basis of the data obtained during the screening of 2700 materials according to a specified bioassay technic, it appears that some organic compounds are highly repellent to rats in feeding tests, and that this repellency may be attributed to the presence of certain functional groups. No conclusions were given as to the possible effectiveness of these materials if applied to papers, etc., in order to produce rat-resistent packages.

The more effective repellents contain nitrogen, sulfur, or both, either in a heterocyclic ring, or in a substituent group. Examples of active classes of compound

are the guanidines, primary, secondary, and tertiary amines and their salts with acetic, hydrochloric and picric acids, nitro compounds, phenols, quaternary ammonium and pyridinium salts, and thiocyanates. The activity of these repellent groups is markedly affected by several factors, such as the length of an attached alkyl chain, unsaturated linkages adjacent to the functional group, and, with aryl compounds, substitution in the ortho, meta, and para positions. Many of the more active repellents are active fungicides, or are structurally related to known fungicidal compounds.

Acknowledgement

The authors take this opportunity to acknowledge the assistance of the following members of the Chemical Staff of the Chemical-Biological Coordination Center: Miss Estaleta Dale, Dr. Harriet A. Geer, Mrs. Mary Ann Jordan and Miss Lucy Carter Lee. They are responsible for the naming and arranging of the compounds in Table II according to Chemical Abstracts' Method of Nomenclature. We also wish to express our appreciation to Dr. W. R. Kirner for his many helpful suggestions in the final preparation of the manuscript.

Reference

(1) Rodent Repellent Studies. I. Development of an Index Number for Expressing Degrees of Repellent Activity. E. Bellack and J. B. DeWitt, J. Am. Pharm. Soc. (Sci. Ed.) 38(2), 109-112 (1949).

REPELLENCY OF COMPOUNDS TO RATS

TABLE II

Code No.	Classification and Name	Repellency Index
	ACID ANHYDRIDES	
965	Caprylic anhydride	33
	ACID HALIDES	
	Unsubstituted	
1766	Cinnamoyl chloride	3
1757	2-Naphthoyl chloride	22
511	Phthaloyl chloride	26
	Substituted	
1826	Acetyl chloride, chlorodiphenyl-	41
510	Benzoyl chloride, o-amino-	-74
652	-----, p-amino-	-2
154	-----, o-chloro-	30.8
155	-----, p-chloro-	2
152	-----, 2,4-dichloro-	85.7*
156	-----, 3,4-dichloro-	62.4
35	-----, m-nitro-	-7.5
32, 1537	-----, p-nitro-	66, 26
	ACIDS, CARBOXYLIC	
	Unsubstituted	
	Monobasic	
218	Acetic acid, barium salt	64.1
1646	mercury(II) salt	89*
1316	Butyric acid, copper(II) salt	69
952	Capric acid	21
1289	copper(II) salt	61
907	Caproic acid, α-ethyl-	56
944	Caprylic acid	19
1308	copper(II) salt	22
1249	Cinnamic acid	-16
1344	copper(II) salt	46
1423	Crotonic acid, copper(II) salt	55
1081	Cyclohexanebutyric acid, copper(II) salt	54
1082	sodium salt	23
918	Cyclohexanecarboxylic acid	23
1051	Cyclohexanepropionic acid, copper(II) salt	80
1054	sodium salt	28
1056	Cyclohexanevaleric acid, copper(II) salt	50
1057	sodium salt	11
2507	Elaidic acid	-79
924	Enanthic acid	-46
1015	Fencholic acid, copper(II) salt	63
1014	sodium salt	26
1314	Formic acid, copper(II) salt	70
922, 975	10-Hendecenoic acid	58, 66
2117	zinc salt	48
1243	Lauric acid	32.8
1523	copper(II) salt	41

TABLE II

Code No.	Classification and Name	Repellency Index
	ACIDS, CARBOXYLIC	
	Unsubstituted	
	Monobasic	
1246	Myristic acid	-8.5
2120	1-Naphthaleneacetic acid	-98
351	Naphthenic acid, cobalt(II) salt	73.6
1739, 353	copper(II) salt	80, 41.1
352	lead(II) salt	34.6
350	manganese(II) salt	21.9
354	mercury(II) salt	77.3
349, 1734	zinc salt	59, 25.4
1268	1-Naphthoic acid	-21
1517	copper(II) salt	82.6
2554	2-Naphthoic acid	-6
1309	Oleic acid, copper(II) salt	14
1242	Palmitic acid	0
1396	Pelargonic acid, copper(II) salt	80
1283	Propionic acid, copper(II) salt	64
810	Sorbic acid, sodium salt	-45
1248	Stearic acid	-83
1448	copper(II) salt	21
2455	-----, x-(4-biphenylyl)-	-58
994	-----, x-(x,x-xylyl)-	10
1564	p-Toluic acid	20
1439	Valeric acid, copper(II) salt	32
	Polybasic	
572	1,2,4-Butanetricarboxylic acid	46
414	Fumaric acid	0.8
1113	Homophthalic acid	-12
2553	Itaconic acid	49
1247	Maleic acid	80.4
1286	Malonic acid, copper(II) salt	34
1025	-----, benzyl-	50
1282	Oxalic acid, copper(II) salt	61
219	dipotassium salt	16
1239	Phthalic acid	21.9
1493	copper(II) salt	44
2446	Pimelic acid	-3
1245	Succinic acid	40
1253	copper(II) salt	66.1
2493, 2404	-----, alkenyl(C_6-C_8)-, amminecopper complex	15, 71.8
2494	amminesilver complex	-18.5
2360	disilver salt	86*
	Monosubstituted	
	Alcohols	
1267	Benzilic acid	54.9
1285	Citric acid, copper(II) salt	-92
1263	Glycolic acid, copper(II) salt	79.9
2552	Mandelic acid	62
2118	Ricinoleic acid, barium salt	-8
2503	Stearic acid, θ,ζ-dihydroxy- (high melting isomer)	-22
2502	(low melting isomer)	-48
2100	Tropic acid	44

TABLE II

Code No.	Classification and Name	Repellency Index
	ACIDS, CARBOXYLIC	
	Monosubstituted	
	Amides	
2018, 1691, 1611	Anthranilic acid, N-acetyl-	-1, 28, 67
1626	copper(II) salt	66
2458, 2021	Benzoic acid, p-acetamido-	-11, 44.7
842	Isobutyric acid, α-benzamido-	11.5
2129	Maleamic acid	-122
590	Phthalamic acid, N-1-naphthyl-	12.5
608	-----, N-2-naphthyl-	59.4
1419	Succinanilic acid	26
	Ethers	
2445	Acetic acid, (p-tert-butylphenoxy)-	40.4
2437	-----, 2-naphthoxy-	-34
1150, 1241	-----, phenoxy-	48, 51
2459	-----, (3,5-xylyloxy)-	76.2
1244	Anisic acid	-48.4, -48
723, 2442	Benzoic acid, o-carboxymethoxy-	31.5, 23.4
2447	Valeric acid, δ,δ'-oxydi-	14
	Halides	
664	Acetic acid, difluoro-, potassium and sodium salts (mixture)	23.5
725	-----, iodo-, potassium salt	46.2
54	Benzoic acid, o-chloro-	50.7
321	copper(II) salt	67.1
343	lead(II) salt	-179
53	-----, p-chloro-	41
340	copper(II) salt	69.1
345	zinc salt	10
56	-----, 2,4-dichloro-	45
341	copper(II) salt	79.4
55	-----, 3,4-dichloro-	66.8
344	copper(II) salt	63.5
2519	Cinnamic acid, 2,4-dichloro-	17.8
1530	Crotonic acid, cis-α-bromo-	69
2109	-----, α-chloro-	45
1532	Hydrocinnamic acid, α-bromo-	53.5
1759	Propionic acid, α,β-dibromo-	94*
50	-----, pentachloro-	46
1531	Valeric acid, α-bromo-β-methyl-	35
2456	-----, δ-bromo-	21
	Heterocyclic Compounds	
1912	Cinchophen	72
2036	hydrochloride	47
2038	picrate	86.2*
1331	Coumarilic acid	50
2438,1266	2-Furoic acid	56.3,66.2
1440	copper(II) salt	66
733	2,3-Pyrazinedicarboxylic acid	15.4
1713	Quinolinic acid	22
2457	Stearic acid, x-(3-dibenzofuryl)-	-101
2506	-----, θ, ι-epoxy- (high melting isomer)	-147
2505	(low melting isomer)	-91.5
1806	2-Thiophenecarboxylic acid	30

TABLE II

Code No.	Classification and Name	Repellency Index
	ACIDS, CARBOXYLIC	
	Monosubstituted	
	Nitriles	
416	Acetic acid, cyano-	40.3
1105	Cinnamic acid, α-cyano-	51
978	Cyclohexaneacetic acid, α-cyano-	46
	Nitro Compounds	
2596	Abietic acid, dehydro-x,x-dinitro-	-143
721	Acetic acid, (2,4-dinitrophenyl)-	61
738	-----, (p-nitrophenyl)-	22
2291	Benzoic acid, 3,5-dinitro-	65.7
1413	Phthalic acid, 3-nitro-	41
1408	-----, 4-nitro-	51
	Phenols	
1496	Acetic acid, (o-hydroxyphenyl)phenyl-	42.5
392	2,3-Cresotic acid	70, 70.4
2099	β-Resorcylic acid	22
609	Salicylic acid, 3,3'-methylenedi-	48
	Quaternary Nitrogen Compounds	
	Ammonium compound,	
2229	bis(2-carboxyethyl)dimethyl ----- methyl sulfate	69.5
2409, 413	Betaine, hydrochloride	4, 27
	Sulfides	
2527	Acetic acid, (decylmercapto)-	-38
741	-----, thiodi-	4.8
2127	Benzoic acid, o-(1-carboxyethylmercapto)-	-2
2124	-----, o-(carboxymethylmercapto)-	46
757, 1656	-----, o,o'-dithiodi-	-48, 71.6
2528	Butyric acid, γ-(octylmercapto)-	13.7
	Sulfonic Acids	
2639	Benzoic acid, m-sulfo-	34.4
2407	Stearic acid, x-(2,4-diisopropyl-5-sulfophenyl)-, disodium salt	-49
2369	-----, x-(4-ethyl-3-sulfophenyl)-, disodium salt	60
2370	-----, x-(5-sulfocarvacryl)-, disodium salt	38.5
2366	-----, x-(3-sulfo-p-tolyl)-, disodium salt	27
2368	-----, x-(5-sulfo-2,4-xylyl)-, disodium salt	-14
	Thiols	
109	Acetic acid, mercapto-	86*
108	ammonium salt	63
220	copper(II) derivative, calcium salt	56
313	copper(II) derivative, copper(II) salt	43.5
241	copper(II) derivative, disodium salt	18.5
221	lead(II) derivative, lead(II) salt	31
315	lithium derivative, lithium salt	92.8*
215	mercury(II) derivative, barium salt	-109
342	nickel(II) derivative	22
314	sodium derivative, sodium salt	87.7*

TABLE II

Code No.	Classification and Name	Repellency Index
	ACIDS, CARBOXYLIC	
	Monosubstituted	
	Thiols	
242, 301	Acetic acid, mercapto-, sodium salt	31, 47
316	zinc derivative	85.8*
758, 199	Benzoic acid, o-mercapto-	86*, 50
	Thioureas	
308, 1172	Hydantoic acid, δ-phenyl-γ-thio-	64, 56
532	diammonium derivative, copper(II) salt	7
533	disodium derivative, copper(II) salt	-31
457	sodium derivative, sodium salt	33.9
348, 214	Propionic acid, β-(guanylmercapto)-	45.2, -0.5 (T)
	Miscellaneous	
714	Acetic acid, (p-aminophenyl)-	11.1
3	-----, selenocyano-, potassium salt	53
2687	Glycocyamine	6
844	Hydantoic acid, α,α-dimethyl-, sodium salt	-5
675	Isobutyric acid, α-amino-	-101
1167	Maleanilic acid, N-(phenylthiocarbamyl)-	16
2405	Succinic acid, α-alkenyl-, monobutyl ester, sodium salt	99*
734	-----, dioxo-, phenylosazone, disodium salt	49.7
	Disubstituted	
	Amine-Halides	
1097	Anthranilic acid, 5-bromo-	34
1512, 1711	-----, 5-chloro-	40, 18
	Amine-Heterocyclic Compounds	
2541	Acrylic acid, β-(5-methyl-2-pyridylamino)-	48.3
1541	6-Quinoxalinecarboxylic acid, 2-amino-	45
	Amine-Nitriles	
2497	Glycine, N,N-bis(2-cyanoethyl)-	10.3
2500	-----, N-(2-cyanoethyl)-	5
	Amine-Phenols	
1346	Salicylic acid, 4-amino-	31
1697, 1693	-----, 5-amino-	11, 0
1323	hydrochloride	27
	Ester-Halides	
1498	Salicylic acid, 5-bromo-, acetate	70
1499	-----, 5-iodo-, acetate	72.5
	Ether-Halides	
2520	Acetic acid, (m-chlorophenoxy)-	73.9
2521	-----, (o-chlorophenoxy)-	41.2
2531	-----, (p-chlorophenoxy)(p-chlorophenyl)-	64.4
2530	-----, (p-chlorophenyl)(2,4-dichlorophenoxy)-	89.6*
2526	-----, (2,4-dichloro-1-naphthoxy)-	48.7
1644	-----, (2,4-dichlorophenoxy)-	66
2522	-----, (2,4,6-trichlorophenoxy)-	75.7
2529	Enanthic acid, α-(2,4-dichlorophenoxy)-	33.7

TABLE II

Code No.	Classification and Name	Repellency Index
	ACIDS, CARBOXYLIC	
	Disubstituted	
	Ether-Ketones	
1694	Acetic acid, (p-acetylphenoxy)-	47
1695	-----, (p-benzoylphenoxy)-	-8
	Halide-Nitro Compounds	
2534	Benzoic acid, 2-bromo-3-nitro-	15.8
2535	-----, 2-bromo-3-nitro-, ammonium salt	22
2536	-----, 2-bromo-5-nitro-	36.3
2537	ammonium salt	78.6
2538	-----, 4-bromo-3-nitro-	67.6
	Halide-Phenols	
607	2-Naphthoic acid, 1-bromo-3-hydroxy-	76.7
1500	Propionic acid, β-(4-hydroxy-3,5-diiodophenyl)-α-phenyl-	50
	Miscellaneous	
2374	Anthranilic acid, 4-arsono-	-16
1529	Arginine, salt with flavianic acid	-40
2373	Benzoic acid, 4-arsono-2-nitro-	82
2375	-----, (p-carbamylmethylamino)-, sodium salt	30
1111	1,2H-Benzopyran-3-carboxylic acid, 2-oxo-	97.1*
2111	Hydrocinnamic acid, β-nitro-α-phenacyl-	62
2108	Mucobromic acid	47
1534	Proline, 4-hydroxy-, reineckate	44.8
2369	Stearic acid, x-(3-sulfo-p-phenetyl)-, disodium salt	29
	Polysubstituted	
2411	Acetic acid, (4,6-diamino-s-triazin-2-ylmercapto)-, sodium salt	2
2689	Benzoic acid, p-(2,4-diamino-6-hydroxy-5-pyrimidylazo)-	-33
1728	Gallocyanine	-13
1846	Hydrocinnamic acid, α-(α-bromophenacyl)-β-nitro-	38.7
2382	Rhodamine B Extra	83.4
1900	Salicylic acid, 5-(p-nitrophenylazo)-	84
2074	Tartrazine O	43
	ALCOHOLS	
	Unsubstituted	
238	2-Buten-1-ol	46
887	Cyclohexanol, 2,4-diamyl-	41
1012	2,4-Decanediol	33
2511	1,2-Dodecanediol	56.5
2147	1-Dodecanol	32
1822	1,2-Ethanediol, triphenyl-	-34
1011	2,4-Heptanediol, 5-ethyl-	53
2508	1,2-Hexadecanediol	-26.5
2107	Isopulegol	32
1000	4,7-Methanoinden-6-ol, 3a,4,5,6,7,7a-hexahydro-	20
852, 970	1-Naphthaol, 1,2,3,4-tetrahydro-	80, 81
1007	2-Naphthol, decahydro-	40
960, 845	-----, 1,2,3,4-tetrahydro-	87*, 88*
2509	1,2-Tetradecanediol	-27

TABLE II

Code No.	Classification and Name	Repellency Index
	ALCOHOLS	
	Monosubstituted	
	Acids	
1267	Benzilic acid	54.9
1285	Citric acid, copper(II) salt	-92
1263	Glycolic acid, copper(II) salt	79.9
2552	Mandelic acid	62
2118	Ricinoleic acid, barium salt	-8
2503	Stearic acid, θ,ι-dihydroxy- (high melting isomer)	-22
2502	(low melting isomer)	-48
2100	Tropic acid	44
	Amides	
2045	Acetoacetanilide, copper(II) derivative	16
1437	Citranilide	35
1525	Glycolanilide	83
2643	Lactamide, N-amyl-	34.6
2653	-----, N-benzyl-	72.2
2644	-----, N-cyclohexyl-	69.5
2654	-----, N-decyl-	56.6
2645	-----, N-(1,3-dimethylbutyl)-	87.7*
2648	-----, N-dodecyl-	55.2
2650	-----, N-hexadecyl-	-87
2646	-----, N-hexyl-	14.4
2642	-----, N-isobutyl-	40
2640	-----, N-isopropyl-	51.8
2651	-----, N-octadecyl-	-16.2
2647	-----, N-octyl-	61.8
2649	-----, N-tetradecyl-	24.2
630	Mandelamide, N-2-naphthyl-	-8
	Amines	
1390	1-Butanol, 2-amino-	-22
1874	-----, 4-amino-, picrate	91*
1588	Ethanol, 2-amino-, picrate	91*
1592	-----, 2-(2-aminoethylamino)-	91*
1862	-----, 2-anilino-, picrate	93*
2290	-----, 2-diethylamino-	40
1864	picrate	74
1559	-----, 2-dimethylamino-, picrate	78.8
2170	-----, 2-N-ethylanilino-, picrate	76.6
2354	-----, 2,2'-(ethylenediimino)di-	-33
1418	-----, 2,2'-iminodi-	48
1519	hydrochloride	42
1860	-----, 2,2'-(methylimino)di-, picrate	96*
1767a	-----, 2,2',2''-nitrilotri-	-3
2696	hemifluosilicate (H_2SiF_6)	44
1526	hydrochloride	8
1859	-----, 2,2'-(phenylimino)di-, picrate	84
2421	-----, 2-o-toluidino-, picrate	66
2418	salt with 1 f. wt. 1,3,5-trinitrobenzene	95.7*
2356	-----, 2,2'-(m-tolylimino)di-	53.5
2168	Pararosaniline	-41
1991	9-Phenanthrenemethanol, α-(diamylaminomethyl)-1,2,3,4-tetrahydro-, hydrochloride	90*
1569	1,2-Propanediol, 3-amino-	23
1379	1,3-Propanediol, 2-amino-2-(hydroxymethyl)-	-51

TABLE II

Code No.	Classification and Name	Repellency Index
	ALCOHOLS	
	Monosubstituted	
	Amines	
1382	1,3-Propanediol, 2-amino-2-methyl-	-36
1388	1-Propanol, 2-amino-2-methyl-	3
234	-----, 3-amino-2-methyl-	20.5
1870	picrate	85*
2353	2-Propanol, 1-amino-, picrate	70.1
2423	-----, 1-dimethylamino-	69
1584	-----, 1,1'-iminodi-, picrate	85*
2352	-----, 1,1',1''-nitrilotri-	83.6
	Esters	
1032	Acetoacetic acid, ethyl ester, copper(II) derivative	85*
2619	Lactic acid, bornyl ester	59.4
911	Mandelic acid, ethyl ester	57
946	hexyl ester	45
947	isobutyl ester	58
2501	Stearic acid, θ,ι-dihydroxy-, butyl ester (low melting isomer)	-59
2451	methyl ester (high melting isomer)	17
2454	methyl ester (low melting isomer)	-20
	Ethers	
97	Ethanol, 2-(x,x-diamylphenoxy)-	12
2628	-----, 2-{2-[2-(isobornyloxy)ethoxy]ethoxy}-	50.3
1049	Flexol Plasticizer B-400 (polyalkyleneglycol derivative)	34
275	Polyethyleneglycol 1500	-54.5
277	Polyethyleneglycol 3600	-90
2616	2-Propanol, 1-[(1-p-menthen-8-yl)oxy]-	63.8
	Halides	
1825	1-Indanol, 2-bromo-	61
232	2-Propanol, 1,3-dichloro-	75.7
	Heterocyclic Compounds	
2424	2-Imidazoline-1-ethanol, 2-(x-heptadecenyl)-	65
2412	4-Morpholineethanol, picrate	80
2504	1-Octadecanol, 9,10-epoxy-	-47
2285	2-Pyridineethanol, picrate	63
2286	2-Pyridinepropanol, picrate	89.2*
2420	4-Pyridinepropanol, picrate	77
2491	Pyridinium compound. 1-(2-hydroxyethyl) ----- 2-benzothiazolyl sulfide	62.3
	Ketones	
966	6-Dodecanone, 7-hydroxy-	36
1771	1,3-Indandione, 2-isovaleryl-, copper(II) derivative	78
228	sodium derivative	87.7*
1774	2,4-Pentanedione, copper(II) derivative	100*
1107	dimethylthallium(III) derivative	33
2361	phenylmercury(II) derivative	86.3*
1777	1,3-Propanedione, 1,3-diphenyl-, copper(II) derivative	7
982	Valerophenone, β,γ,δ-trihydroxy-	35
	Nitro Compounds	
1389	1-Butanol, 2-nitro-	79

TABLE II

Code No.	Classification and Name	Repellency Index
	ALCOHOLS	
	Monosubstituted	
	Nitro Compounds	
401	1,3-Propanediol, 2-ethyl-2-nitro-	19
1380	-----, 2-(hydroxymethyl)-2-nitro-	-67
393	1-Propanol, 2-methyl-2-nitro-	-13
	Sulfonium Compounds	
	Sulfonium compounds.	
1297	dodecyl(2-hydroxyethyl)methyl ----- methylsulfate	93.7*
2362	tris(2-hydroxyethyl) ----- chloride	-4
	Miscellaneous	
	Ammonium compound.	
1021	benzylbis(3-dimethylamino-2-hydroxypropyl)hexadecyl ----- chloride, bis(methochloride)	0
	Arsonium compound.	
2243	diethyl(3-hydroxyphenyl)methyl ----- iodide	90.4*
1894	Benzoin, oxime	58
100	Carbamic acid, 2-hydroxyethyl-, allyl ester	28
1768a	Glucose, thiosemicarbazone	40
382	Phosphoric acid, monobutyl mono(2-hydroxyethyl) ester	29.6
	Polysubstituted	
	Halide-Imines	
613	Ethanol, 2-(m-chlorophenylimino)-1,2-diphenyl-	-15
614	-----, 2-(p-chlorophenylimino)-1,2-diphenyl-	-37
	Miscellaneous	
	Ammonium compounds.	
1037	benzyl[3-(p-cyclohexylphenoxy)-2-hydroxypropyl]bis-(2-hydroxyethyl) ----- chloride	-21
1024	hexadecyliminobis(2-hydroxytrimethylene)bis[trimethyl----- chloride]	-1
2376	m-Arsanilic acid, 4-(2-hydroxypropoxy)-, monosodium salt	31
1478	Benzyl alcohol, o-(4,6-diamino-s-triazin-2-yl)-	31
2551	Furoin	40.3 (T)
2416	Glutarimide, β-[2-(3,5-dimethyl-2-oxocyclohexyl)-2-hydroxyethyl]-	100*
229	1,3-Indandione, 2-(β-diethylaminopropionyl)-, potassium derivative	35.2
2585	2-Propanol, 1,1,1-trichloro-3-nitro-	100*
1985	4-Pyrone, 5-hydroxy-2-(hydroxymethyl)-	-94
735	p-Quinone, 2,5-dichloro-3,6-dihydroxy-	-14, -14.5
1171	s-Triazine-2(1H)-thione, tetrahydro-5-(2-hydroxyethyl)-	54
2441	Vitamin C, ester with palmitic acid	-14
	ALDEHYDES	
	Unsubstituted	
888	Cinnamaldehyde	54
893	-----, α-amyl-	69

TABLE II

Code No.	Classification and Name	Repellency Index
	ALDEHYDES	
	Monosubstituted	
	Ethers	
962	Benzaldehyde, p-butoxy-	58
906	-----, o-ethoxy-	48
957	-----, p-propoxy-	69
879	o-Veratraldehyde	81
	Heterocyclic Compounds	
1808	3-Indolecarboxaldehyde	-14
880	Piperonal	46
2297	Quinaldehyde	72.8
2498	2-Thiophenecarboxaldehyde	-14
	Miscellaneous	
2110	Benzaldehyde, 2,4-dichloro-	68
963	Butyraldehyde, γ-cyano-α,α-diethyl-	62
	Disubstituted	
899	Bourbonal(3-ethoxy-4-hydroxybenzaldehyde)	25
2108	Mucobromic acid	47
872	o-Vanillin	40
	AMIDES	
	Unsubstituted	
	Monobasic Acids	
389	Acetamide	-59.5
1507	-----, N,N'-benzylidenebis-	-17
956	-----, N,N-diisoamyl-	82
1370	-----, N,N-diphenyl-	37
2094	-----, N-methyl-	-15
2019	-----, N-methyl-N-1-naphthyl-	57
2014, 2569	-----, N-1-naphthyl-	62, 43
2568, 2024	-----, N-2-naphthyl-	71, 90.5*
2449	-----, N,N'-p-phenylenebis-	-100
412	Acetanilide	54.5
1501, 929	-----, N-butyl-	73, 80.6
1509	-----, p-tert-butyl-	56
958	-----, N-isoamyl-	82
2567	m-Acetotoluidide	52.9
2566	o-Acetotoluidide	59.3
1179	p-Acetotoluidide	30
2022	2,4-Acetoxylidide	67
2015	2,5-Acetoxylidide	76
1147	Acrylamide	74
211	Armid HT (mixed aliphatic amides, C_{16}-C_{18})	-81
1878	Benzamide, N,N'-ethylenebis-	-1
2305	4,4'-Biacetanilide	-187
1392	Butyramide	-56
1315	Butyranilide	51.5
1317	p-Butyrotoluidide	75.2
1312	Cinnamamide	41
1343	Cinnamanilide	29

TABLE II

Code No.	Classification and Name	Repellency Index
	AMIDES	
	Unsubstituted	
	Monobasic Acids	
2448, 1393	Crotonamide	-12, 49
1422	Crotonanilide	54
2588	Formamide, N-isobornyl-	T
1420	Formanilide	68
1287	p-Formotoluidide	81.2
976	10-Hendecenamide; N,N-diethyl-	52
1502	Isobutyranilide, N-ethyl-	90*
1524	Lauramide	35
1522	Lauranilide	40
1495	1-Naphthamide	12
1516	1-Naphthanilide	-8
1369	Oleamide	23
1428	Oleanilide	12
1377	Pelargonamide	8
1520	Pelargonanilide	86*
407, 1906	Piperidine, 1-benzoyl-	67, 40
807	Sorbamide	52
1406	Stearamide	-81
1447	Stearanilide	-13
1435	Valeramide	-56
1452	Valeranilide	76.6
1436	p-Valerotoluidide	80
	Polybasic Acids	
1397	Malonamide	2
1376	Malonanilide	-38
1276	Oxamide	16
1142	Oxanilide	5
1454	Phthalanilide	-58
	Monosubstituted	
	Acids	
1691, 1611 2018	Anthranilic acid, N-acetyl- copper(II) salt	-1, 28, 67 66
2021, 2458	Benzoic acid, p-acetamido-	-11, 44.7
842	Isobutyric acid, α-benzamido-	11.5
2129	Maleamic acid	-122
590	Phthalamic acid, N-1-naphthyl-	12.5
608	-----, N-2-naphthyl-	59.4
1419	Succinanilic acid	26
	Alcohols	
2045	Acetoacetanilide, copper(II) derivative	16
1437	Citranilide	35
1525	Glycolanilide	83
2643	Lactamide, N-amyl-	34.6
2653	-----, N-benzyl-	72.2
2644	-----, N-cyclohexyl-	69.5
2654	-----, N-decyl-	56.6
2645	-----, N-(1,3-dimethylbutyl)-	87.7*
2648	-----, N-dodecyl-	55.2
2650	-----, N-hexadecyl-	-87
2646	-----, N-hexyl-	14.4
2642	-----, N-isobutyl-	40
2640	-----, N-isopropyl-	51.8

TABLE II

Code No.	Classification and Name	Repellency Index
	AMIDES	
	Monosubstituted	
	Alcohols	
2651	Lactamide, N-octadecyl-	-16.2
2647	-----, N-octyl-	61.8
2649	-----, N-tetradecyl-	24.2
630	Mandelamide, N-2-naphthyl-	-8
	Esters	
175	Acetanilide, p-hydroxy-, acetate	-108
969	Adipamic acid, N,N-diisopropyl-, methyl ester	52
1044	Caproic acid, α-ethyl-, diester with α-ethyl-N,N-bis(2-hydroxyethyl)caproamide	28
968	Glutaramic acid, N,N-diisopropyl-, propyl ester	76
2641	Isobutyramide, α-hydroxy-N-methyl-, acetate	-2.2
2652	Lactamide, N-butyl-, acetate	54.1
	Ethers	
226	Acetamide, α-(allyloxy)-N-octyl-	70.7
900	-----, N-amyl-α-butoxy-	70
892	-----, α-butoxy-N-cyclohexyl-	97.5*
223	-----, α-(2-butoxyethoxy)-N-cyclohexyl-	82.9
1425	-----, α-phenoxy-	-5
1394	Acetanilide, α-phenoxy-	44
612	p-Acetanisidide	4
2435	Formanilide, p,p'-oxybis-	-186
	Halides	
991	Acetamide, α,α,α-trichloro-N-(2-chloroethyl)-	83
792	Acetanilide, α-chloro-	69.4
2496	-----, 2-chloro-4-phenyl-	96.6*
2434	-----, 2,3-dichloro-	1.6
317	Benzamide, o-chloro-	68.7
318	-----, p-chloro-	51.2
417	-----, o-chloro-N,N-bis(p-heptylphenyl)- and Benzamide, o-chloro-N-(p-heptylphenyl)-N-phenyl-	35.3
363	-----, o-chloro-N,N-bis(2-methylallyl)-	64.1
420	-----, o-chloro-N,N'-diphenyl-	83.4
419	-----, p-chloro-N,N-diphenyl-	83.9
319	-----, 2,4-dichloro-	62.8
320	-----, 3,4-dichloro-	76.1
589	Malonanilide, p,p'-dichloro-	-1
	Heterocyclic Compounds	
1451	2-Furamide	65.4
1438	2-Furanilide	67.5
2495	2-Thiopheneacetamide	60
	Ketones	
1545	Acetoacetamide, N,N'-ethylenebis-	43
1543, 388	Acetoacetanilide	12, 6.1
1544	o-Acetoacetotoluidide	55
	Nitro Compounds	
509	p-Acetotoluidide, x,x-dinitro-	68.5
1052	Benzamide, N-decyl-p-nitro-	78

TABLE II

Code No.	Classification and Name	Repellency Index
	AMIDES	
	Monosubstituted	
	Nitro Compounds	
360	Benzamide, m-nitro-	68.3
339	-----, p-nitro-	82.2
	Phenols	
183	Acetanilide, o-hydroxy-	-9, -9.6
184	-----, p-hydroxy-	-3, -3.5
185	-----, p-hydroxy-N-methyl-	-86, -86.3
1503	Benzamide, p-hydroxy-	42.5
629	2-Naphthamide, 3-hydroxy-N-2-naphthyl-	-28
626	2-Naphthanilide, 3-hydroxy-	24
	Miscellaneous	
1348, 2017	Acetanilide, p-diethylamino-	90.5*, 90*
1513	-----, p,p'-dithiobis-	-37
1472	-----, p-(guanylsulfonyl)-	-94
2140	-----, p,p'-[p-phenylenebis(iminosulfonyl)]bis-	-95
2161	Benzamide, N-(benzylguanyl)-, hydrochloride	65
478, 1484	-----, N-(cyanoguanyl)-	32, 37
1095	Glyoxylanilide, oxime	62
1104	Selenocyanic acid, ester with α-hydroxyacetanilide	97.8*
	Polysubstituted	
	Ester-Halides	
362	Benzoic acid, o-chloro-, ester with o-chloro-N-(2-hydroxy-tert-butyl)benzamide	75.7
602	Malonanilic acid, 2,4-dichloro-, ethyl ester	-21
	Ether-Halides	
2539	m-Acetotoluidide, $\alpha^3,\alpha^3,\alpha^3$-trifluoro-α-(2,4,5-trichlorophenoxy)-	81.9
418	Benzamide, o-chloro-N-(p-isopropoxyphenyl)-N-phenyl-	61.6
	Halide-Nitro Compounds	
591	Benzanilide, 2'-chloro-4-nitro-	-110
624	-----, 3'-chloro-4-nitro-	-10
625	-----, 4'-chloro-4-nitro-	-143
	Halide-Phenols	
627	2-Naphthanilide, 2'-chloro-3-hydroxy-	-156
628	-----, 2',4'-dichloro-3-hydroxy-	-6
	Miscellaneous	
2020	Acetanilide, p-(8-hydroxy-5-quinolylazo)-	17
2136	Acetarsone	-17
1901	Acetoacetanilide, o-chloro-	9
2375	Benzoic acid, (p-carbamylmethylamino)-, sodium salt	30
1700	Crotonanilide, β-antipyrylamino-	67
2151	Pyridinium compound. 1-(2-hydroxyethylcarbamylmethyl) ----- chloride, myristate	-24
1273	Succinanilide	-32

TABLE II

Code No.	Classification and Name	Repellency Index
	AMIDINES	
1905, 1708	Acetamidine, hydrochloride	36, 50
731	Formamidine, N,N'-diphenyl-	66.8
	AMINE OXIDES	
2236	Diethylamine, 2,2'-dichloro-N-methyl-, N-oxide, hydrochloride	100*
	AMINES**	
	Unsubstituted	
	Primary	
2343	Alkylamine(C_8-C_{18}, chiefly dodecyl), salt with dioctyl phosphate	73.7
2342	salt with di(and tri)methyl triphosphate	51
2344	salt with monobutyl phosphate	69.8
2335	salt with monoethyl mono-9-octadecenyl phosphate	61.6
1251	Allylamine, acetate	95.3*
2216	compound with 1 f. wt. 1,3,5-trinitrobenzene	100*
1867	picrate	97*
2183	picrolonate	95*
2433	salt with 1 f. wt. 4,6-dinitro-o-cresol	91*
1372	Amylamine, acetate	8
1373	hydrochloride	23
2174	Aniline, compound with 1 f. wt. 1,3,5-trinitrobenzene	91.5*
1750	hemisulfate	44
465	Armeen CD (mixed aliphatic amines, C_8-C_{18}, chiefly dodecyl)	81
662	acetate	83.4
661	hydrochloride	81.2
2334	salt with sym-tributyl tetraphosphate	57
676	sulfate	77.2
459	Armeen HTD (mixed aliphatic amines, C_{16}-C_{18}, chiefly hexadecyl and octadecyl)	42
654	hydrochloride	60
208	Armeen SD (mixed aliphatic amines, C_{16}-C_{18}, chiefly octadecadienyl and octadecenyl)	89*
569	hydrochloride	88*
835	Armeen T (hexadecylamine, octadecenylamine and octadecylamine)	92.5*
1751, 1763a	Benzidine, dihydrochloride	100*, 88*
1761	-----, 3,3'-diphenyl-	21
1767	Benzylamine, picrate	75
671	2-Biphenylamine	31.5
1115	1/3 f. wt. phosphate	71
1116	hemiphosphate	62
1117	monophosphate	73
2283	picrate	77.4
2545	Butylamine, hemifluophosphate(H_2PO_3F)	81
1672	nitrate	51
1663	picrate	82
1953	sec-Butylamine, picrate	88.4*
1258	Decylamine, acetate	45.9
440	hydrochloride	89*
1671	monophosphate	68
1141	picrate	93.4*

**See also Heterocyclic Nitrogen Compounds

TABLE II

Code No.	Classification and Name	Repellency Index
	AMINES**	
	Unsubstituted	
	Primary	
1055	Decylamine, salt with 1 f. wt. cyclohexanebutyric acid	42
1053	salt with 1 f. wt. cyclohexanevaleric acid	48
207, 834	Dodecylamine	89*, 38.2
1310	acetate	91*
800	anthranilate	94.3*
793	benzoate	95.1*
1669	compound with 1/3 f. wt. boron chloride (BCl_3)	99*
2276	compound with 1 f. wt. copper(II) chloride	86*
2315	compound with 1 f. wt. 1,3,5-trinitrobenzene	94*
2273	compound wtih 1 f. wt. zinc chloride	72.5
801	crotonate	94*
570	hydrochloride	98.7*
798	malonate	91.3*
1668	monophosphate	82
1667	nitrate	87*
1313	picrate	87.5*
797	propionate	97.4*
806	salt with 1 f. wt. α-aminoisobutyric acid (Armeen 12D)	77.6
799	salt with 1 f. wt. 1,2,4-butanetricarboxylic acid	84
795	salt with 1 f. wt. chloroacetic acid	92.6*
803	salt with 1 f. wt. p-chlorophenol	85.9*
804	salt with 1 f. wt. cyanoacetic acid	93*
1017	salt with 1 f. wt. cyclohexanepropionic acid	79
2349	salt with 1 f. wt. di(and)trimethyl triphosphate	39.4
2432	salt with 1 f. wt. 4,6-dinitro-o-cresol	90*
2339	salt with 1 f. wt. dioctyl phosphate	62.4
1016	salt with 1 f. wt. fencholic acid	75
794	salt with 1 f. wt. mercaptoacetic acid	78.6
2347	salt with 1 f. wt. monobutyl phosphate	75.3
2348, 2332	salt with 1 f. wt. monoethyl monoisoamyl phosphate	70, 56
2346	salt with 1 f. wt. monoethyl mono-9-octadecenyl phosphate	52.4
802	salt with 1 f. wt. phenol	73.2
2345	salt with 1 f. wt. tributyl tetraphosphate	39.4
836	salt with 1 f. wt. trichloroacetic acid	86*
796	sorbate	74.4
805	sulfamate	90*
1270	Ethylamine, acetate	4
1140	hydrochloride	33
1587	picrate	82
1255	Ethylenediamine, diacetate	35.4
1254	dihydrochloride	44.8
2027	dioxalate	56
1553	dipicrate	89*
2472	Hendecylamine	51.5
1662	Heptylamine, picrate	84
464	Hexadecylamine	89*
657	acetate	93*
656	hydrochloride	89.5*
655	monosulfate	67.6
1103	picrate	86*
2460	Hexylamine	91.8*
2172, 2351	-----, 2-ethyl-, picrate	90.8*, 81.1

** See also Heterocyclic Nitrogen Compounds

TABLE II

Code No.	Classification and Name	Repellency Index
	AMINES**	
	Unsubstituted	
	Primary	
1256	Isopropylamine, acetate	37.7
1288	hydrochloride	65
1271	Methylamine, acetate	0
1673	monophosphate	65
1590	picrate	89*
394	1-Naphthylamine	87*
1972	compound with 1 f. wt. 1,3,5-trinitrobenzene	100*
1434	picrate	87*
411	2-Naphthylamine	75
1143	acetate	75
1997	compound with 1 f. wt. 1,3,5-trinitrobenzene	99.5*
1181	hydrochloride	71
1144	picrate	90*
2467	Nonylamine	76.1
463	Octadecylamine	82.3
1257	acetate	78
653	hydrochloride	76.4
1261	picrate	78.7
1561	Octylamine, picrate	92*
2330, 1414	m-Phenylenediamine	100*, 92.2*
1593	dipicrate	95*
1760a, 1349	o-Phenylenediamine	73, 84
2310	compound with 1 f. wt. 1,3,5-trinitrobenzene	100*
2053	dioxalate	70
1715, 1759a	p-Phenylenediamine	86.4*, 90*
2284	compound with 1 f. wt. 1,3,5-trinitrobenzene	100*
2030	dioxalate	77
1521	1,2-Propanediamine, dihydrochloride	56
2035	dioxalate	23
1554	dipicrate	82
1275	Propylamine, acetate	27
1395	hydrochloride	36
1563	picrate	90*
2574	Rosin amine (mixture of abietylamines in various stages of hydrogenation)	98.2*
2579	acetate	100*
2577	compound with zinc dimethyldithiocarbamate	89.7*
2580	pentachlorophenate	98.4*
2578	picrate	100*
2694	resinate (wood rosin, chiefly abietic acid)	75.5
2695	sulfate	88.5*
1151, 458	Tetradecylamine	67, 82
2001	picrate	87*
1764a	o-Tolidine	-72
937	Toluene-2,4-diamine	93*
2112	2,4,6-Toluenetriamine	52
1973	m-Toluidine, compound with 1 f. wt. 1,3,5-trinitrobenzene	91*
1631	picrate	82
1960	o-Toluidine, compound with 1 f. wt. 1,3,5-trinitrobenzene	100*
1548	hydrochloride	66
2032	monooxalate	47

** See also Heterocyclic Nitrogen Compounds

TABLE II

Code No.	Classification and Name	Repellency Index
	AMINES**	
	Unsubstituted	
	Primary	
1427	o-Toluidine, picrate	87*
1250	p-Toluidine	96.7*
1441	picrate	96*
876, 672	Xenylamine	85*, 96*
2215	x,x-Xylidine, compound with 1 f. wt. 1,3,5-trinitrobenzene	100*
1139	hydrochloride	61
1630	picrate	82
2463	2,4-Xylidine	85.6*
2464	2,5-Xylidine	98.5*
1747	hydrochloride	69
	Secondary	
1002	Aniline, N-allyl-	92*
913	Benzylamine, N-phenyl-	84.5
233	Diallylamine, 2,2'-dimethyl-	25
1272	Diamylamine, acetate	84
1252	hydrochloride	75.3
1262	picrate	81.3
1582	Dibenzylamine, picrate	87.5*
2350	Dibutylamine, picrate	77.2
2473	Dicyclohexylamine	76.7
1930	picrate	70.4
2485	Didecylamine	84.6
2180	Didodecylamine, picrate	90.6*
1424	Diethylamine, picrate	86*
2478	Diheptylamine	85.7*
2474	Dihexylamine	79.9
2480	-----, 2,2'-diethyl-	72.7
2475	Diisohexylamine	90.8*
1705	Diisopropylamine, picrate	89.5*
1318	Dimethylamine, acetate	9
1345	picrate	80
1758a	Di-2-naphthylamine	-23
2482	Dinonylamine	88.5*
1402	Dioctadecylamine	-2.6
435, 2481	Dioctylamine	93.1*, 76.2
2336, 1400 898	Diphenylamine	90*, 80, 77.6
1456	acetate	86.7*
1729	hydrochloride	92*
107	-----, p,p'-diheptyl- and Diphenylamine, p-heptyl-	30
1562	Dipropylamine, picrate	86.7*
1876	Ethylenediamine, N,N'-diphenyl-	72
2000	compound with 1 f. wt. mercury(II) chloride	97*
2049	dihydrochloride	87*
2026	dioxalate	77
1998	dipicrate	95*
2476	Heptylamine, N-phenyl-	63.9
1903, 1757a	1-Naphthylamine, N-phenyl-	88*, 93*
2046	hydrochloride	53
2055	monooxalate	82

** See also Heterocyclic Nitrogen Compounds

TABLE II

Code No.	Classification and Name	Repellency Index
	AMINES**	
	Unsubstituted	
	Secondary	
2052	1-Naphthylamine, picrate	91*
2661, 57		
870, 1914	2-Naphthylamine, N-phenyl-	40.5, 52.7, 49, 48.5
2054	hydrochloride	83.5
2051	picrate	91*
1881	p-Phenylenediamine, N,N'-dimethyl-, dioxalate	100*
59, 2662	-----, N,N'-di-2-naphthyl-	-3.3, -102
1995, 647		
105	-----, N,N'-diphenyl-	11, -4
1890	o-Toluidine, N-benzyl-	77
2034	hydrochloride	85*
2025	picrate	88*
	Tertiary	
2072	Aniline, p,p'-methylenebis[N,N-dimethyl-	18.5
2169	compound with 1 f. wt. 1,3,5-trinitrobenzene	75
2177	dipicrate	93*
2176	monopicrate	90.3*
2085	Benzylamine, N,N-dimethyl-, picrate	95*
1665	Cyclohexylamine, N,N-diethyl-, picrate	93*
2181	Dodecylamine, N,N-dimethyl-, picrate	93.8*
839	Octadecylamine, N,N-dimethyl	86.6*
1259	Triamylamine, picrate	80.7
1269	Tribenzylamine	34
1547	hydrochloride	54
1659	nitrate	51
1375	picrate	58
2341	Tributylamine	60.3
1264	picrate	89.4*
1284	Triethylamine, hydrochloride	40
1674	nitrate	66
1260	picrate	83.4
2483	Trihexylamine	89.5*
1664	Triisoamylamine, picrate	85*
1274	Trimethylamine, hydrochloride	39
1145	picrate	96.5*
	Mixed	
649	1,2,4-Benzenetriamine, N^1-phenyl-	61.5(T)
2470	1,4-Cyclohexanediamine, N,N-diethyl-	63.5
2308	Diethylenetriamine	73.6
2047	trioxalate	-3
1589	tripicrate	76
2486	Dipropylamine, 3,3'-bis(diisoamylamino)-	94.8*
2471	-----, 3,3'-bis(dimethylamino)-	72.6
2422	Dipropylenetriamine, tripicrate	70
2468	1,4-Pentanediamine, N^1,N^1-diethyl-	28
2384	dihydrobromide	87*
2031	p-Phenylenediamine, N,N-diethyl-, picrate	93*
2013	-----, N,N-dimethyl-	100*
2137	monosulfate	88*
1983	-----, N-phenyl-	90*

** See also Heterocyclic Nitrogen Compounds

TABLE II

Code No.	Classification and Name	Repellency Index
	AMINES**	
	Unsubstituted	
	Mixed	
2477	1,3-Propanediamine, N,N-diamyl-	89.8*
2484	-----, N,N-dioctyl-	90.1*
2465	Tetraethylenepentamine	-119
1557	pentapicrate	52.5
2461	Triethylenetetramine	-17
1556	tetrapicrate	92*
	Monosubstituted	
	Acid Halides	
510	Benzoyl chloride, o-amino-	-74
652	-----, p-amino-	-2
	Acids	
714	Acetic acid, (p-aminophenyl)-	11.1
675	Isobutyric acid, α-amino-	-101
	Alcohols	
1390	1-Butanol, 2-amino-	-22
1874	-----, 4-amino-, picrate	91*
1588	Ethanol, 2-amino-, picrate	91*
1592	-----, 2-(2-aminoethylamino)-	91*
1862	-----, 2-anilino-, picrate	93*
2290	-----, 2-diethylamino-	40
1864	picrate	74
1559	-----, 2-dimethylamino-, picrate	78.8
2170	-----, 2-N-ethylanilino-, picrate	76.6
2354	-----, 2,2'-(ethylenediimino)di-	-33
1418	-----, 2,2'-iminodi-	48
1519	hydrochloride	42
1860	-----, 2,2'-(methylimino)di-, picrate	96*
1767a	-----, 2,2',2''-nitrilotri-	-3
2696	hemifluosilicate (H_2SiF_6)	44
1526	hydrochloride	8
1859	-----, 2,2'-(phenylimino)di-, picrate	84
2418	-----, 2-o-toluidino-, compound with 1 f. wt. 1,3,5-trinitrobenzene	95.7*
2421	picrate	66
2356	-----, 2,2'-(m-tolylimino)di-	53.5
2168	Pararosaniline	-41
1991	9-Phenanthrenemethanol, α-(diamylaminomethyl)-1,2,3,4-tetrahydro-, hydrochloride	90*
1569	1,2-Propanediol, 3-amino-	23
1379	1,3-Propanediol, 2-amino-2-(hydroxymethyl)-	-51
1382	-----, 2-amino-2-methyl-	-36
1388	1-Propanol, 2-amino-2-methyl-	3
234	-----, 3-amino-2-methyl-	20.5
1870	picrate	85*
2353	2-Propanol, 1-amino-, picrate	70.1
2423	-----, 1-dimethylamino-	69
1584	-----, 1,1'-iminodi-, picrate	85*

** See also Heterocylcic Nitrogen Compounds

TABLE II

Code No.	Classification and Name	Repellency Index
	AMINES**	
	Monosubstituted	
	Alcohols	
2352	2-Propanol, 1,1',1''-nitrilotri-	83.6
	Azo Compounds	
1892	Aniline, N,N-dimethyl-p-(1-naphthylazo)-	40
1888	-----, N,N-dimethyl-p-phenylazo-	73
1896	-----, p-phenylazo-	90*
1031	o-Toluidine, 4,4'-azodi-	43
1875	x,x-Xylidine, 4-(x,x-xylylazo)-, hydrochloride	100*
	Esters	
2613	Glycine, N-butyl-, isobornyl ester	79.7
2605	-----, N,N-diamyl-, bornyl ester	72.8
	Ethers	
2381	Amylamine, 5,5'-oxybis-, dihydrochloride	50
2312	o-Anisidine, compound with 1 f. wt. 1,3,5-trinitrobenzene	98.6*
1426	picrate	90*
1240,1421		
1352, 927	p-Anisidine	43, 79, 78
2314	compound with 1 f. wt. 1,3,5-trinitrobenzene	90*
1433	picrate	72
1992	Diphenylamine, p-(2-methylallyloxy)-	8, -8
1623	Ethylamine, 2-(2-sec-butoxyethoxy)-	(waste)
1615	-----, 2-(2-tert-butoxyethoxy)-	49
841	-----, N,N-dimethyl-2-[2-(p-1,1,3,3-tetramethylbutylphenoxy)ethoxy]-	68.7
262	o-Phenetidine	36.4
1628	picrate	83
263	p-Phenetidine	77.3
2414	Propylamine, 3-(2-ethylhexyloxy)-, picrate	82
	Halides	
1744	Aniline, p-bromo-	86*
2259	compound with 1 f. wt. 1,3,5-trinitrobenzene	100*
2257	-----, m-chloro-, compound with 1 f. wt. 1,3,5-trinitrobenzene	100*
2217	-----, o-chloro-, compound with 1 f. wt. 1,3,5-trinitrobenzene	100*
1746, 257	-----, p-chloro-	67.2, 99*
2311	compound with 1 f. wt. 1,3,5-trinitrobenzene	100*
1742	-----, 2,4-dichloro-	92*
2083	picrate	75
282	-----, 2,5-dichloro-	50.5
1576	-----, pentachloro-	47.5
2389	Diethylamine, 2,2'-dichloro-, hydrochloride	100*
2248	-----, 2,2'-dichloro-N-methyl-, hydrochloride	100*
2194	o-Phenylenediamine, 4-chloro-	70
2240	p-Phenylenediamine, N,N-bis(2-chloroethyl)-, dihydrochloride	95.9*
727	-----, 2-chloro-, dihydrochloride	80.2
2258	o-Toluidine, 6-chloro-, compound with 1 f. wt. 1,3,5-trinitrobenzene	100*

** See also Heterocyclic Nitrogen Compounds

TABLE II

Code No.	Classification and Name	Repellency Index
	AMINES**	
	Monosubstituted	
	Heterocyclic Compounds	
2657	Acridine, 9-amino-, monohydrochloride, monohydrate	88.9*
1506	Antipyrine, 4-amino-	80
2697	-----, 4,4'-(p-dimethylaminobenzylidene)di-, dihydrochloride	91.7*
2393	Basic Orange 3RN	84
14	Benzimidazole, 2-amino-	76
13	Benzothiazole, 6-amino-2-mercapto-	-210
1401	3-Dibenzofuranamine	79
1837	Di-2-thenylamine	75
1533	Gramine	89.5*
1704, 2193	2-Imidazoline, 1-(2-butylaminoethyl)-2-hendecyl-	85.6*, 90.7*
474, 136	Melamine	37.3, 33
2338	monometaphosphate	34
1698	-----, N^2,N^2,N^4,N^6-tetrakis(aminomethyl)-	18
	Phenazaselenonium compound.	
1106	10,10a-dihydro-3-(1-naphthylamino) ----- chloride	44
1926, 2075	Phenosafranine	88.5*, 90*
2270	2-Picoline, 6-amino-, picrate	100*
2278	3-Picoline, 2-amino-, picrate	63.5
2280	4-Picoline, 2-amino-, picrate	100*
2403	Piperidine, 1-(10-diethylaminodecyl)-, salt with 2 f. wt. 2,4,6-trinitrobenzenesulfonic acid	85*
2402	-----, 1-(10-dipropylaminodecyl)-, salt with 2 f. wt. 2,4,6-trinitrobenzenesulfonic acid	98*
406	Pyridine, 2-amino-	77.6
1334	-----, 2,2'-iminodi-	86*
	Pyridinium compound.	
439	2-amino-1-methyl ----- iodide	65
1885	Pyrimidine, 2-amino-	75
2029	picrate	90*
1398	-----, 5-aminohexahydro-5-methyl-1,3-bis(1-methylheptyl)-	93*
2693	-----, 2,4,5,6-tetraamino-, sulfate	60.4
1540	Quinoxaline, 2-amino-	71
287	Thiazole, 2-amino-	79
11	-----, 2-amino-4-(4-biphenylyl)-	-60
19	-----, 2-amino-4-methyl-, hydrochloride	75.7
1487	s-Triazine, 2,4-diamino-6-amyl-	82
1485	-----, 2,4-diamino-6-phenyl-	91.2*
1474	1,2,4,1H-Triazole, 3-amino-5-phenyl-, mononitrate	35.8
1648	s-Trithiane, 2,4,6-tris(p-dimethylaminophenyl)-	-1
	Ketones	
1505	Acetophenone, m-amino-	70
2231	Anthraquinone, 1-amino-	-72
1898	-----, 2-amino-	61
2444, 1749	Benzophenone, 4-amino-	68, 62.4
2594	Propiophenone, β-dimethylamino-	88.4*
	Nitriles	
1968	Acetonitrile, (p-aminophenyl)-, hydrochloride	89.5*
2479	Propionitrile, β-dihexylamino-	91.3*

** See also Heterocyclic Nitrogen Compounds

TABLE II

Code No.	Classification and Name	Repellency Index
	AMINES**	
	Monosubstituted	
	Nitro Compounds	
791	Aniline, N,N-dimethyl-p-nitro-	75
259	-----, 2,4-dinitro-	77
255	-----, o-nitro-	66
1411	-----, p-nitro-	75
1328	Diphenylamine, o,o'-dinitro-	-10
1333	-----, 2,4-dinitro-	16
1895	-----, 2,2',4,4',6,6'-hexanitro-	8
1989	-----, 4-nitro-	27
1018, 1743	o-Toluidine, 5-nitro-	87.5*, 84
765	p-Toluidine, 3,5-dinitro-	83.4, 83
995	-----, 2-nitro-	42
2261	-----, 3-nitro-	58
	Phenols	
1993	4,4'-Bi-o-cresol, 6,6'-diallyl-α,α'-bis(diethylamino)-, dihydrochloride	95*
1066	o-Cresol, 4-butyl-α-dimethylamino-	93.8*
1067	-----, α-dimethylamino-4-octyl-	88*
1065	p-Cresol, α-dimethylamino-	51
1180	acetate (salt)	58
1221	copper(II) derivative	89.6*
1220	hydrochloride	74
1068	Mesitol, $\alpha^2,\alpha^4,\alpha^6$-tris(dimethylamino)-	79
1706	tripicrate	86*
781	1-Naphthol, 4-amino-	93*, 93.3*
778	-----, 5-amino-, hydrochloride	39, 38.6
42	Phenol, m-amino-	25.5
534	copper(II) derivative	78.4
41	-----, o-amino-	71.8
43	-----, p-amino-	-56
2443	-----, 4-amino-2-phenyl-	-7
2571	-----, p-anilino-	75.6
189	-----, p-benzylamino-	66
168	-----, m-diethylamino-	40.5
2130	-----, p-dimethylamino-, monosulfate	46
768	2,5-Xylohydroquinone, α^2,α^5-bis(dimethylamino)-	91*
	Sulfides	
743	Aniline, p,p'-dithiobis [N,N-dimethyl-	67
1511	-----, o,o'-dithiodi-	77.8
1978	-----, p,p'-dithiodi-, dihydrochloride	95*
740	-----, p,p'-thiobis[N,N-dimethyl-	59
	Miscellaneous	
2017, 1348	Acetanilide, p-diethylamino-	90*, 90.5*
1640	Aniline, p-(acetoxymercuri)-	89*
1152	-----, N,N-dimethyl-p-nitroso-	88*
651	Anthranilic acid, thiol-	-22
631, 715	Arsanilic acid	47.5, 91.3*
1765a	Benzaldehyde, p-dimethylamino-, thiosemicarbazone	79
790, 367	Benzenediazosulfonic acid, p-dimethylamino-, sodium salt	(T) 78.2

** See also Heterocyclic Nitrogen Compounds

TABLE II

Code No.	Classification and Name	Repellency Index
	AMINES**	
	Monosubstituted	
	Miscellaneous	
2082	Propionic acid, β,β'-methyliminodi-, diethyl ester picrate	88.5*
724	Rhodanilic acid, ammonium salt	83.5
1471	Sulfaguanidine	-61
2666	Sulfuric acid, mono(2-aminoethyl) ester	65.5
1622	Thiocyanic acid, p-dimethylaminophenyl ester	82.8
2306	triaminomethyl ester	53.7
2143	p-Toluenesulfonamide, α-amino-, hydrochloride	-15
2394	o-Toluenesulfonic acid, 5-dimethylamino-, potassium salt	-9
	Disubstituted	
	Acid-Halides	
1097	Anthranilic acid, 5-bromo-	34
1512, 1711	-----, 5-chloro-	40, 18
	Acid-Heterocyclic Compounds	
2541	Acrylic acid, β-(5-methyl-2-pyridylamino)-	48.3
1541	6-Quinoxalinecarboxylic acid, 2-amino-	45
2382	Rhodamine B Extra	83.4
	Acid-Nitriles	
2497	Glycine, N,N-bis(2-cyanoethyl)-	10.3
2500	-----, N-(2-cyanoethyl)-	5
	Acid-Phenols	
1346	Salicylic acid, 4-amino-	31
1697, 1693	-----, 5-amino-	11, 0
1323	-----, hydrochloride	27
	Ether-Halides	
1703	Aniline, 3-chloro-4-phenoxy-	87.5*
1740, 285	o-Anisidine, 5-chloro-	31.6, 79
930	Cyclohexylamine, N-[2-(p-chlorophenoxyethyl)]-	86*
1578	Diethylamine, N-methyl-2,2'-bis(pentachlorophenoxy)-	35
	Ether-Heterocyclic Compounds	
1980	Quinoxaline, 5-amino-6,7-dimethoxy-	70
1483	s-Triazine, 2,4-diamino-6-(2-ethoxyethyl)-	61
	Halide-Heterocyclic Compounds	
366	Pyrimidine, 2-chloro-4-dimethylamino-6-methyl-	(T)
2282	-----, 4-chloro-2-dimethylamino-6-methyl-, acetate	83.2
2392	Quinoline, 7-chloro-4-(4-diethylamino-1-methylbutylamino)-, diphosphate	82
	Halide-Nitro Compounds	
369	Aniline, 2-bromo-4-nitro-	67.7
368	-----, 4-bromo-2-nitro-	59.4
998, 415	-----, 2-chloro-4-nitro-	68, 67.8, 76, 67.6
409	-----, 4-chloro-2-nitro-	34.3, 34

** See also Heterocyclic Nitrogen Compounds

TABLE II

Code No.	Classification and Name	Repellency Index
	AMINES**	
	Disubstituted	
	Halide-Nitro Compounds	
1748	Aniline, 2,6-dichloro-4-nitro-	76
371	p-Toluidine, N-(5-chloro-2,4-dinitrophenyl)-	-21.7
	Halide-Phenols	
1942	o-Cresol, 6,6'-methylenebis[4-chloro-α-dimethylamino-	95*
173	Phenol, 4-amino-2,6-dibromo-	-134
1570	-----, 3-amino-2,4,5,6-tetrachloro-	73
	Halide-Ketones	
2397	Anthraquinone, 1-amino-5-chloro-	-72
2398	-----, 1-amino-6-chloro-	-13
2399	-----, 1-amino-8-chloro-	-8
2395	-----, 1-amino-2,4-dibromo-	-23
2396	-----, 2-amino-1,3-dibromo-	-88
	Heterocyclic-Phenols	
1476	Phenol, o-(4,6-diamino-s-triazin-2-yl)-	34.3
1479	-----, o-[2-(4,6-diamino-s-triazin-2-yl)vinyl]-	69
	Ketone-Phenols	
2377	Anthraquinone, 1-amino-4-hydroxy-	31
2379	-----, 1-hydroxy-4-(p-toluidino)-	-118
2378	Anthrarufin, 4,8-diamino-	-48
	Phenol-Sulfonic Acids	
1761a	1-Naphthol-3,6-disulfonic acid, 8-amino-	4
190	1-Phenol-4-sulfonic acid, 2-amino-	24
	Miscellaneous	
470	Ammelide, dithio-	65.9
1024	Ammonium compound, hexadecyliminobis(2-hydroxytrimethylene)bis [trimethyl ----- chloride]	-1
2379	Anthranilic acid, 4-arsono-	-16
1529	Arginine, salt with flavianic acid	-40
2408	Arsanilic acid, N-(4,6-diamino-s-triazin-2-yl)-, sesquisodium salt, dihydrate	-2
2375	Benzoic acid, p-(carbamylmethylamino)-, sodium salt	30
1911	Benzopurpurin 4B	-20
1478	Benzyl alcohol, o-(4,6-diamino-s-triazin-2-yl)-	31
2132	Carbanilic acid, p-methoxy-, m-diethylaminophenyl ester	-13
1336	Cresol, α-amino-, hydrochloride	33
2611	Glycine, N,N-dibutyl-, 2-nitroisobutyl ester	45.5
229	1,3-Indandione, 2-(β-diethylaminopropionyl)-, potassium derivative	35.2
186	Phenol, 2-amino-4-nitro-	46
1877	-----, p-(2,4-dinitroanilino)-	-20
21	1,4-Phthalazinedione, 5-amino-2,3-dihydro-	-35
2388	2-Pyrimidinethiol, 4,6-diamino-, sodium derivative	18
2383	Rhodamine 6GDN	100*

** See also Heterocyclic Nitrogen Compounds

TABLE II

Code No.	Classification and Name	Repellency Index
	AMINES**	
	Disubstituted	
	Miscellaneous	
1542	Sulfanilamide, N^1-2-quinoxalyl-	-40
1762a	Sulfanilic acid, N-(2,4-dinitrophenyl)-	42
1470, 479	1,3,5,2H-Thiadiazine-2-thione, 4,6-diamino-	70.3, 58.2
1486	s-Triazine, 2,4-diamino-6-(m-nitrophenyl)-	73
1482	s-Triazine-2-acetonitrile, 4,6-diamino-	42
1481	s-Triazine-2-ethanesulfonic acid, 4,6-diamino-	7
475	s-Triazine-2-thiol, 4,6-diamino-	46
	Polysubstituted	
2411	Acetic acid, (4,6-diamino-s-triazin-2-ylmercapto)-, sodium salt	2
2400	Aldarsone	-22
2376	m-Arsanalic acid, 4-(2-hydroxypropoxy)-, monosodium salt	31
2689	Benzoic acid, p-(2,4-diamino-6-hydroxy-5-pyrimidylazo)-	-33
2401	Bismarsen	-33
1700	Crotonanilide, β-antipyrylamino-	58
1728	Gallocyanine	67
2162	Guanidine, 1-(p-chlorophenyl)-3-(4,6-diamino-triazin-2-yl)-	-13
2163	-----, 1-(4,6-diaminotriazin-2-yl)-3-(2,5-dichloro-phenyl)-	83
1477	Phenol, 2-(4,6-diamino-s-triazin-2-yl)-6-nitro-	65
1480	1-Phenol-2-sulfonic acid, 4-(4,6-diamino-s-triazin-2-yl)-	-31.5
2688	4-Pyrimidol, 2,6-diamino-5-phenylazo-	57
1168	Uracil, 6-amino-2-thio-	85.4*
		-30
	AMMONIUM COMPOUNDS	
	See Quaternary Nitrogen Compounds	
	ANHYDRIDES	
	See Acid Anhydrides	
	ANILS	
	See Imines	
	ANTIMONY COMPOUNDS	
1981	1,3,2-Benzodioxastibiole, 2-hydroxy-	61
67	Carbamic acid, dimethyldithio-, antimony(III) salt	-5
2510	Dodecyl thioantimonite(H_3SbS_3), tri-	15

**See also Heterocyclic Nitrogen Compounds

TABLE II

Code No.	Classification and Name	Repellency Index
	ARSENIC COMPOUNDS	
	Arsonates	
2136	Acetarsone	-17
2400	Aldarsone	-22
2379	Anthranilic acid, 4-arsono-	-16
715, 631	Arsanilic acid	91.3*, 47.5
2408	-----, N-(4,6-diamino-s-triazin-2-yl)-, sesquisodium salt, dihydrate	-2
2376	m-Arsanilic acid, 4-(2-hydroxypropoxy)-, monosodium salt	31
6	Benzenearsonic acid	37
2406, 10	-----, p-hydroxy-	-35, 6
7	sodium salt	65.2
2372	-----, 4-hydroxy-3-nitro-	100*
8	-----, m-nitro-	12
1030	-----, o-nitro-	97*
2540	-----, p-(p-sulfamylphenylsulfamyl)-	6
2373	Benzoic acid, 4-arsono-2-nitro-	82
9	α-Toluenearsonic acid	71.2
	Miscellaneous	
1817	Arsine, triphenyl-	71
2243	Arsonium compound. diethyl(3-hydroxyphenyl)methyl ----- iodide	90.4*
773	Azoxybenzene, 3,3'-bis(dichloroarsino)-	33
2401	Bismarsen	58
2247	Sulfone, bis(2-dichloroarsinoethyl)	84.1
	AZO AND AZOXY COMPOUNDS	
	Unsubstituted	
1899	Azobenzene	91*
2263	Azoxybenzene	97*
	Substituted	
2020	Acetanilide, p-(8-hydroxy-5-quinolylazo)-	17
1892	Aniline, N,N-dimethyl-p-(1-naphthylazo)-	40
1888	-----, N,N-dimethyl-p-phenylazo-	73
1896	-----, p-phenylazo-	90*
773	Azoxybenzene, 3,3'-bis(dichloroarsino)-	33
1884	-----, 4,4'-dinitro-	24
367, 790	Benzenediazosulfonic acid, p-dimethylamino-, sodium salt	78.2, (T)
2689	Benzoic acid, p-(2,4-diamino-6-hydroxy-5-pyrimidylazo)-	-33
1911	Benzopurpurin 4B	-20
2266	m-Cresol, 4-phenylazo-	50
2309	o-Cresol, 4-phenylazo-	55.5
1904	Dithizone	92*
1855	Formamide, α-(2,6-dichloro-4-hydroxyphenylazo)-	25
2016, 1910	1-Naphthol, 4-(p-nitrophenylazo)-	-58, 30
188	Phenol, p-phenylazo-	58, 58.3
2688	4-Pyrimidol, 2,6-diamino-5-phenylazo-	85.4*

TABLE II

Code No.	Classification and Name	Repellency Index
	AZO AND AZOXY COMPOUNDS	
	Substituted	
2073	Resorcinol, 4-phenylazo-	68
1900	Salicylic acid, 5-(p-nitrophenylazo)-	84
2074	Tartrazine O	43
1031	o-Toluidine, 4,4'-azodi-	43
789	3,5-Xylenol, 2,4-bis(phenylazo)-	82
1089	-----, 4-phenylazo-	90.9*
1875	x,x-Xylidine, 4-(x,x-xylylazo)-, hydrochloride	100*
	AZINES	
	See Hydrazines	
	BORON COMPOUNDS**	
2624	Boric acid, triester with 2-[(1-p-menthen-8-yl)oxy] ethanol	64.4
1669	Dodecylamine, compound with 1/3 f. wt. boron chloride (BCl_3)	99*
	CARBAMATES	
	Unsubstituted	
328	Carbamic acid, amyl ester	61.6
2134	decyl ester	12
2655	methyl ester	-11
290	propyl ester	22.9
2251	-----, dimethyl-, phenyl ester	75.2
2234	triester with pyrogallol	71.1
332	-----, ethyl-, ethyl ester	54.8
88	Carbanilic acid, isopropyl ester	59.7
588	methyl ester	43.3
159	2-Oxazolidone, 3-phenyl-	12
	Substituted	
	Ammonium compounds.	
2516	diethyl(m-hydroxyphenyl)methyl ----- iodide, carbanilate	84.2
1714	(5-hydroxycarvacryl)trimethyl ----- iodide, dimethylcarbamate	83
1716	(4-hydroxy-o-cumyl)trimethyl ----- iodide, dimethylcarbamate	61
2131	Bicarbamic acid, diethyl ester	-37
87	Carbamic acid, diester with diethylene glycol	-157
2233	-----, dimethyl-, ester with 6-nitroeugenol	67.2
100	-----, 2-hydroxyethyl-, allyl ester	28
2160	-----, (phenylguanyl)-, ethyl ester	33
2132	Carbanilic acid, p-methoxy-, m-diethylaminophenyl ester	-13
2570	Glucose, α(and β)-D-, pentacarbanilate	-101

** See also Inorganic Compounds

TABLE II

Code No.	Classification and Name	Repellency Index
	CARBOHYDRAZIDES	
326	Carbohydrazide, 1,5-diphenyl-	-68
	CHROMIUM COMPOUNDS	
722	Guanidine, monoreineckate	-35
703	Nicotine, compound with 1/3 f. wt. chromium(III) salicylate	86.3*
706	compound with 1/2 f. wt. copper(II) dichromate	72.5
1534	Proline, 4-hydroxy-, reineckate	44.8
724	Rhodanilic acid, ammonium salt	83.5
	COBALT COMPOUNDS**	
351	Naphthenic acid, cobalt(II) salt	73.6
705	Nicotine, compound with 1 f. wt. cobalt(II) oxalate	97.9*
707	compound with 1/2 f. wt. cobalt(II) picrate	99*
	CONDENSATION PRODUCTS	
	See Unknown Structures	
	COPPER COMPOUNDS**	
220	Acetic acid, mercapto-, copper(II) derivative, calcium salt	56
313	copper(II) derivative, copper(II) salt	43.5
241	copper(II) derivative, disodium salt	18.5
2045	Acetoacetanilide, copper(II) derivative	16
1032	Acetoacetic acid, ethyl ester, copper(II) derivative	85*
809, 808	Alkanesulfonic acid, copper(II) salt	73, 71.7
1626	Anthranilic acid, N-acetyl-, copper(II) salt	66
346	Benzenethiol, copper(II) derivative	64
321	Benzoic acid, o-chloro-, copper(II) salt	67.1
340	-----, p-chloro-, copper(II) salt	69.1
341	-----, 2,4-dichloro-, copper(II) salt	79.4
344	-----, 3,4-dichloro-, copper(II) salt	63.5
1778	1,3-Butanedione, 1-phenyl-, copper(II) derivative	81
1316	Butyric acid, copper(II) salt	69
1289	Capric acid, copper(II) salt	61
1308	Caprylic acid, copper(II) salt	22
132	Carbamic acid, dibutyldithio-, copper(II) salt	-77
92	-----, diethyldithio-, copper(II) salt	-104
1344	Cinnamic acid, copper(II) salt	46
1285	Citric acid, copper(II) salt	-92
530	o-Cresol, 3,5-dinitro-, copper(II) derivative	(T)
1221	p-Cresol, α-dimethylamino-, copper(II) derivative	89.6*
1423	Crotonic acid, copper(II) salt	55
1081	Cyclohexanebutyric acid, copper(II) salt	54
1051	Cyclohexanepropionic acid, copper(II) salt	80
1056	Cyclohexanevaleric acid, copper(II) salt	50
347	Dodecanethiol, copper(II) derivative	11
2276	Dodecylamine, compound with 1 f. wt. copper(II) chloride	86*
1015	Fencholic acid, copper(II) salt	63
1314	Formic acid, copper(II) salt	70

** See also Inorganic Compounds

TABLE II

Code No.	Classification and Name	Repellency Index
	COPPER COMPOUNDS**	
1440	2-Furoic acid, copper(II) salt	66
1263	Glycolic acid, copper(II) salt	79.9
532	Hydantoic acid, δ-phenyl-γ-thio-, diammonium derivative copper(II) salt	7
533	disodium derivative, copper(II) salt	-31
1771	1,3-Indandione, 2-isovaleryl-, copper(II) derivative	78
1523	Lauric acid, copper(II) salt	41
1286	Malonic acid, copper(II) salt	34
353, 1739	Naphthenic acid, copper(II) salt	80, 41.1
1517	1-Naphthoic acid, copper(II) salt	82.6
706	Nicotine, compound with 1/2 f. wt. copper(II) dichromate	72.5
698	compound with 1/2 f. wt. copper(II) fumarate	100*
699	compound with 1 f. wt. copper(II) phthalate	92*
1309	Oleic acid, copper(II) salt	14
1282	Oxalic acid, copper(II) salt	61
1396	Pelargonic acid, copper(II) salt	80
1774	2,4-Pentanedione, copper(II) derivative	100*
534	Phenol, m-amino-, copper(II) derivative	78.4
528	-----, p-bromo-, copper(II) derivative	81.3
531	-----, 2-bromo-4-phenyl-, copper(II) derivative	69.3
560	-----, p-chloro-, copper(II) derivative	63
529	-----, 4-chloro-2-phenyl-, copper(II) derivative	7
558	-----, 2,4-dibromo-, copper(II) derivative	67
559	-----, 2,4-dichloro-, copper(II) derivative	55
456	-----, p-nitro-, copper(II) derivative	68.4, 68
561	-----, 2,4,6-tribromo-, copper(II) derivative	44.4
453	-----, 2,4,6-trichloro-, copper(II) derivative	61
1493	Phthalic acid, copper(II) salt	44
2126	Phytic acid, hexacopper(II) salt	56
1777	1,3-Propanedione 1,3-diphenyl-, copper(II) derivative	7
1283	Propionic acid, copper(II) salt	64
2008	Quinaldine, compound with 1/2 f. wt. copper(II) chloride hydrochloride	78:5
1448	Stearic acid, copper(II) salt	21
1253	Succinic acid, copper(II) salt	66.1
2404, 2493	-----, α-alkenyl-, amminecopper complex(alkenyl = C_6-C_8)	71.8, 15
1643	Urea, thio-, copper(II) derivative	54
1439	Valeric acid, copper(II) salt	32
	CYANIDES	
	See Nitriles	
	DIAZO COMPOUNDS	
	See Azo Compounds	
	DISULFIDES	
	See Sulfides	
	DITHIOCARBAMATES	
	See Thiocarbamates	

** See also Inorganic Compounds

TABLE II

Code No.	Classification and Name	Repellency Index
	ESTERS, CARBOXYLIC ACIDS	
	Unsubstituted	
	Monobasic Acids	
848	Acetic acid, 1-naphthyl ester	40.3
34	Benzoic acid, methyl ester	10
849	2-naphthyl ester	-38
916	phenethyl ester	13
915	m-tolyl ester	-25
939	o-tolyl ester	53
914	p-tolyl ester	13
985	3-Cyclohexene-1-carboxylic acid, 2-methyl-, ester with 2-methyl-3-cyclohexene-1-methanol	39
948	Naphthenic acid, butyl ester	62
949	ester with ethylene glycol	36
950	ester with pentaerythritol	-20
1692	Phenol, o-phenyl-, acetate	15
264	1,2-Propanediol, diacetate	12.2
2614	Spiro[cyclopropane-1,2'-norcamphane]-2-carboxylic acid, 3',3'-dimethyl-, ethyl ester	51.5
2625	Terpinol, diacetate	87*
	Polybasic Acids	
964	Adipic acid, diallyl ester	91.5*
983	Bicyclo[2.2.1]-5-heptene-2,3-dicarboxylic acid, diallyl ester	83
1048	Phthalic acid, bis(2-ethylhexyl) ester	-10
231	diallyl ester	69.9
546	dibutyl ester	60.7
548	diethyl ester	25.5
547	dimethyl ester	53.9
540	dioctyl ester	9
603, 877, 557	diphenyl ester	-35, -25, -48
1063	Sebacic acid, benzyl butyl ester	-72
1062	dibenzyl ester	-72
1059	dibutyl ester	9
1060	didecyl ester	8
1058	dimethyl ester	33
1061	dioctyl ester	-18
	Monosubstituted	
	Alcohols	
1032	Acetoacetic acid, ethyl ester, copper(II) derivative	85*
2619	Lactic acid, bornyl ester	59.4
911	Mandelic acid, ethyl ester	57
946	hexyl ester	45
947	isobutyl ester	58
2501	Stearic acid, θ,ι-dihydroxy-, butyl ester (low melting isomer)	-59
2451	methyl ester (high melting isomer)	17
2454	methyl ester (low melting isomer)	-20
	Amides	
175	Acetanilide, p-hydroxy-, acetate	-108
969	Adipamic acid, N,N-diisopropyl-, methyl ester	52
1044	Caproic acid, α-ethyl-, diester with α-ethyl-N,N-bis (2-hydroxyethyl)caproamide	28

TABLE II

Code No.	Classification and Name	Repellency Index
	ESTERS, CARBOXYLIC ACIDS	
	Monosubstituted	
	Amides	
968	Glutaramic acid, N,N-diisopropyl-, propyl ester	76
2641	Isobutyramide, α-hydroxy-N-methyl-, acetate	-2.2
2652	Lactamide, N-butyl-, acetate	54.1
	Amines	
2613	Glycine, N-butyl-, isobornyl ester	79.7
2605	-----, N,N-diamyl-, bornyl ester	72.8
	Ethers	
2623	Acetic acid, phenoxy-, isobornyl ester	54.8
932	Acrylic acid, 2-phenoxyethyl ester	43
1046	Butyric acid, α-ethyl-, diester with triethylene glycol	34
1045	Caproic acid, α-ethyl-, diester with polyethylene glycol	36
1050	diester with triethylene glycol	38
227	Diglycolic acid, dibutyl ester	58.4
1302	G-3036 (polyoxyalkylene phenol propionate)	39.5
1301	G-3056 (polyoxyalkylene phenol butyrate)	53
2698	Maleic acid, 1-(2-ethoxycarbethoxy)ethyl 2-ethoxyethyl ester	89.2*
543	Oleic acid, 2-methoxyethyl ester	-8
539	Phthalic acid, bis(2-butoxyethyl) ester	61.7
542	bis(2-methoxyethyl) ester	55
541	Stearic acid, 2-butoxyethyl ester	17.5
	Halides	
828	Fatty acid(C_8-C_{18}, chiefly lauric acid), 2-chloroethyl ester	18
2629	Maleic acid, chloro-, β-bornyl α-methyl ester	94.1*
601	2-Naphthol, 1,3,6-tribromo-, acetate	-63
938	Phenol, o-chloro-, benzoate	51
1298	-----, x,x,x-trichloro-, acetate	35
	Heterocyclic Compounds	
933	Acrylic acid, tetrahydrofurfuryl ester	53
1539	Arecoline, hydrobromide	81
1303	G-2510 (Sorbitan, tetrabutyrate)	36
2606	4-Morpholineacetic acid, isobornyl ester	69.7
951	Naphthenic acid, tetrahydrofurfuryl ester	32
	Pyridinium compounds.	
2590	(1-carboxymethyl) ----- chloride, ester with hydroabietyl alcohol	65.4
2592	(1-carboxymethyl) ----- chloride, isobornyl ester	88.7*
	Sulfides	
2630	Acetic acid, (tert-butylmercapto)-, ester with hydroabietyl alcohol	46.7
2603	-----, thiodi-, ester with hydroabietyl alcohol	15.4
	Miscellaneous	
2618	Acetic acid, mercapto-, isobornyl ester	95.4*
1187	-----, phosphono-, triethyl ester	43
1233	-----, thiocyano-, ethyl ester	92.1*
2609	2-p-menthyl ester	87.1*

TABLE II

Code No.	Classification and Name	Repellency Index
	ESTERS, CARBOXYLIC ACIDS	
	Monosubstituted	
	Miscellaneous	
1227	Acetic acid, thiocyano-, octyl ester	76.5
959	Ethanol, 2,2'-thiodi-, diacetate	34
2523	Lauric acid, diester with 2,2'-sulfonyldiethanol	-36
2082	Propionic acid, β,β'-methyliminodi-, diethyl ester, picrate	88.5*
1281	Pyrethrins and Toluene, α-[2-(2-butoxyethoxy)ethoxy]-4,5-methylenedioxy-2-propyl-	14
882	Salicylic acid, phenyl ester	75.8
2405	Succinic acid, α-alkenyl-, monobutyl ester, sodium salt	99*
	Polysubstituted	
	Acid-Halides	
1498	Salicylic acid, 5-bromo-, acetate	70
1499	-----, 5-iodo-, acetate	72.5
	Amide-Halides	
362	Benzoic acid, o-chloro-, ester with o-chloro-N-(2-hydroxy-tert-butyl)benzamide	75.7
602	Malonanilic acid, 2,4-dichloro-, ethyl ester	-21
	Ether-Halides	
1497	Acetic acid, (2,4-dichlorophenoxy)-, hexaester with inositol	-118
2533	Enanthic acid, α-(2,4-dichlorophenoxy)-, ethyl ester	-42
	Heterocyclic-Ketones	
224	Chelidonic acid, dibutyl ester	65.4
1278	Piperonylcyclonene	11
1279	and Pyrethrins	-10
225	2H-Pyran-6-carboxylic acid, 3,4-dihydro-2,2-dimethyl-4-oxo-, butyl ester	58.1
	Miscellaneous	
2620	Acetic acid, chloro-, ester with 2-isobornylmercapto-ethanol	89.9*
2615	2-nitroisobutyl ester	95.2*
977	tetrahydrofurfuryl ester	80
953	-----, thiocyano-, x-chloroisobornyl ester	56
1347	2-Furanacrylic acid, α-cyano-, ethyl ester	50
2611	Glycine, N,N-dibutyl-, 2-nitroisobutyl ester	45.5
1835	Hydrocinnamic acid, β-nitro-α-phenacyl-, methyl ester	-28
	Pyridinium compound.	
2151	1-(2-hydroxyethylcarbamylmethyl) ----- chloride, myristate	-24
1832	Pyruvic acid, cyanophenyl-, ethyl ester	77
2383	Rhodamine 6 GDN	100*
861	1,2,4-Thiadiazole, 3,5-bis(carbethoxymethylmercapto)-	27
2441	Vitamin C, ester with palmitic acid	-14
	ETHERS	
	Unsubstituted	
886	Anethole	38

TABLE II

Code No.	Classification and Name	Repellency Index
	ETHERS	
	Unsubstituted	
883	Anisole, p-phenyl-	47
2103	Estragole	66
984	Phenetole, p-phenyl-	48
2440	Veratrole, 4-tert-butyl-	59.7
	Monosubstituted	
	Acids	
2445	Acetic acid, (p-tert-butylphenoxy)-	40.4
2437	-----, 2-naphthoxy-	-34
1241,1645	-----, phenoxy-	48, 51, 89
1150	-----, (3,5-xylyloxy)-	76.2
2459	Anisic acid	-48, -48.4
1244	Benzoic acid, o-(carboxymethoxy)-	31.5, 23.4
723, 2442	Valeric acid, δ,δ'-oxydi-	14
2447		
	Alcohols	
97	Ethanol, 2-(x,x-diamylphenoxy)-	12
2628	-----, 2-{2-[2-(isobornyloxy)ethoxy]ethoxy}-	50.3
1049	Flexol Plasticizer B-400 (polyalkyleneglycol derivative)	34
275	Polyethyleneglycol 1500	-54.5
277	Polyethyleneglycol 3600	-90
2616	2-Propanol, 1-[(1-p-menthen-8-yl)oxy]-	63.8
	Aldehydes	
962	Benzaldehyde, p-butoxy-	58
906	-----, o-ethoxy-	48
957	-----, p-propoxy-	69
879	o-Veratraldehyde	81
	Amides	
226	Acetamide, α-(allyloxy)-N-octyl-	70.7
900	-----, N-amyl-α-butoxy-	70
892	-----, α-butoxy-N-cyclohexyl-	97.5*
223	-----, α-(2-butoxyethoxy)-N-cyclohexyl-	82.9
1425	-----, α-phenoxy-	-5
1394	Acetanilide, α-phenoxy-	44
612	p-Acetanisidide	.4
2435	Formanilide, p,p'-oxybis-	-186
	Amines	
2381	Amylamine, 5,5'-oxybis-, dihydrochloride	50
2312	o-Anisidine, compound with 1 f. wt. 1,3,5-trinitrobenzene	98.6*
1426	picrate	90*
927, 1352	p-Anisidine	79, 78, 43
1421, 1240	compound with 1 f. wt. 1,3,5-trinitrobenzene	90*
2314	picrate	72
1433	Diphenylamine, p-(2-methylallyloxy)-	-8, 8
1992	Ethylamine, 2-(2-sec-butoxyethoxy)-	(waste)
1623	-----, 2-(2-tert-butoxyethoxy)-	49
1615	-----, N,N-dimethyl-2-[2-(p-1,1,3,3-tetramethylbutyl-phenoxy)ethoxy]-	68.7
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TABLE II

Code No.	Classification and Name	Repellency Index
	ETHERS	
	Monosubstituted	
	Amines	
262	o-Phenetidine	36.4
1628	picrate	83
263	p-Phenetidine	77.3
2414	Propylamine, 3-(2-ethylhexyloxy)-, picrate	82
	Esters	
2623	Acetic acid, phenoxy-, isobornyl ester	54.8
932	Acrylic acid, 2-phenoxyethyl ester	43
1046	Butyric acid, x-ethyl-, diester with triethylene glycol	34
1045	Caproic acid, α-ethyl-, diester with polyethylene glycol	36
1050	diester with triethylene glycol	38
227	Diglycolic acid, dibutyl ester	58.4
1302	G-3036 (polyoxyalkylene phenol propionate)	39.5
1301	G-3056 (polyoxyalkylene phenol butyrate)	53
2698	Maleic acid, 1-(2-ethoxycarbethoxy)ethyl 2-ethoxyethyl ester	89.2*
543	Oleic acid, 2-methoxyethyl ester	-8
539	Phthalic acid, bis(2-butoxyethyl) ester	61.7
542	bis(2-methoxyethyl) ester	55
541	Stearic acid, 2-butoxyethyl ester	17.5
	Halides	
2542	Anisole, 2,4-dichloro-	85.6*
2556	-----, 2,3,4,5,6-pentachloro-	8.5(T)
840	Ethane, 1-(2-chloroethoxy)-2-(p-1,1,3,3-tetramethylbutylphenoxy)-	-14
744	Ether, bis(p-bromophenyl)	42.1
823	-----, bis(2,4-dibromophenyl)-	-213
769	-----, bis(2,4,6-tribromophenyl)	-137
2561	-----, p-chlorophenyl dodecyl	-122
2452	Phenetole, p,β-dibromo-	71.6
	Heterocyclic Compounds	
2380	Morpholine, 4-{2-[2-(p-1,1,3,3-tetramethylbutylphenoxy)ethoxy]ethyl}-, hydrochloride	79
1281	Pyrethrins and Toluene, α-[2-(2-butoxyethoxy)ethoxy]-4,5-methylenedioxy-2-propyl-	14
2302	Quinoline, 6-methoxy-	86.2*
2303	-----, 1,2,3,4-tetrahydro-6-methoxy-	78
1280	Toluene, α-[2-(2-butoxyethoxy)ethoxy]-4,5-methylenedioxy-2-propyl-	20
	Ketones	
1003	Acetophenone, 4-methoxy-3-methyl-	63
611	1,6-Hexanedione, 1,6-bis(p-methoxyphenyl)-	4
1712	Propiophenone, p-ethoxy-	63
	Nitro Compounds	
1410, 881	Anisole, 2,4-dinitro-	93*, 90*, 92.2*
261	-----, o-nitro-	66.7, 67
894	Phenetole, 2,4-dinitro-	89*
884	-----, p-nitro-	53

TABLE II

Code No.	Classification and Name	Repellency Index
	ETHERS	
	Monosubstituted	
	Phenols	
2104	Eugenol	58
2682	Guaiacol, 6-allyl-	69.5
2105	Isoeugenol	79.4
2685	Phenol, 2-allyl-4-methoxy-	80.1
102, 2634	-----, p-benzyloxy-	63.4, 52
	Phosphorus Compounds	
379	Methanephosphonic acid, ethoxy-, diethyl ester	-8.6
1124	Phosphoric acid, tris(2-butoxyethyl) ester	58
1130	Pyrophosphoric acid, tetrakis(2-butoxyethyl) ester	46
2324, 1137	Tetraphosphoric acid, hexakis(2-butoxyethyl) ester	57.5
2604	Thiophosphoric acid [$(HO)_3P(:S)$], triester with 2-[(1-p-menthen-8-yl)oxy]ethanol	78
	Quaternary Nitrogen Compounds	
	Ammonium compounds.	
1606	benzyldimethyl(octadecyloxymethyl) ----- chloride	92*
1458	benzyldimethyl{2-[2-(x-1,1,3,3-tetramethylbutyl-p-toloxy)ethoxy]ethyl}----- pentasulfide	84.3
1608	dimethyl(2-phenoxyethyl){2-[2-(p-1,1,3,3-tetramethylbutylphenoxy)ethoxy]ethyl} ----- bromide	86*
2057	dimethyl(2-phenoxyethyl){2-[2-(p-1,1,3,3-tetramethylbutylphenoxy)ethoxy]ethyl} ----- chloride	71
1604	trimethyl(2-naphthenyloxyethyl)chloride, (naphthenyl = primarily monocyclic saturated hydrocarbon radicals)	77
1607	Phemerol	98*
	Semicarbazones	
1954	Acetophenone, 4-methoxy-3-methyl-, semicarbazone	74
1848	Benzaldehyde, o-ethoxy-, semicarbazone	-2
1959	-----, p-propoxy-, semicarbazone	12
1847	o-Veratraldehyde, semicarbazone	28
	Thiocyanates	
1620	Thiocyanic acid, diester with diethylene glycol	92*
1321	diester with 4-methoxy-m-xylene-α,α'-diol	81
1627	ester with 2-[2-(p-1,1,3,3-tetramethylbutylphenoxy) ethoxy]ethanol	85.3*
	Thioureas	
1610	Pseudourea, 2-[2-(p-1,1,3,3-tetramethylbutylphenoxy)ethyl]-2-thio-, hydrobromide	88*
1160	Urea, 1-allyl-3-(p-phenetyl)-2-thio-	62
1158	-----, 1-dodecyl-3-p-phenetyl-2-thio-	20
1114	-----, 1-(p-methoxyphenyl)-2-thio-	(T)
	Miscellaneous	
1753	Anisaldehyde, thiosemicarbazone	46
1514	Benzenesulfonamide, p,p'-(ethylenedioxy)bis[N,N-dibutyl-	-77
2624	Boric acid, triester with 2-[(1-p-menthen-8-yl)oxy] ethanol	64.4
87	Carbamic acid, diester with diethyleneglycol	-157
1990	Mercury, ethynylenebis[2-methoxyethyl-	90*

TABLE II

Code No.	Classification and Name	Repellency Index
	ETHERS	
	Monosubstituted	
	Miscellaneous	
2621	Propionitrile, β-isobornyloxy-	77
2595	Succinimide, N-[(isobornyloxy)-tert-butyl]-	43.5
2560	p-Toluenesulfonic acid, diester with diethylene glycol	-44
	Disubstituted	
	Acid-Halides	
2520	Acetic acid, (m-chlorophenoxy)-	73.9
2521	-----, (o-chlorophenoxy)-	41.2
2531	-----, (p-chlorophenoxy)(p-chlorophenyl)-	64.4
2530	-----, (p-chlorophenyl)(2,4-dichlorophenoxy)-	89.6*
2526	-----, (2,4-dichloro-1-naphthoxy)-	48.7
1644	-----, (2,4-dichlorophenoxy)-	66
2522	-----, (2,4,6-trichlorophenoxy)-	75.7
2529	Enanthic acid, α-(2,4-dichlorophenoxy)-	33.7
	Acid-Ketones	
1694	Acetic acid, (p-acetylphenoxy)-	47
1695	-----, (p-benzoylphenoxy)-	-8
	Aldehyde-Phenols	
899	Bourbonal (3-ethoxy-4-hydroxybenzaldehyde)	25
872	o-Vanillin	40
	Amide-Halides	
2539	m-Acetotoluidide, $\alpha^3,\alpha^3,\alpha^3$-trifluoro-α-(2,4,5-trichlorophenoxy)-	81.9
418	Benzamide, o-chloro-N-(p-isopropoxyphenyl)-N-phenyl-	61.6
	Amine-Halides	
1703	Aniline, 3-chloro-4-phenoxy-	87.5*
285, 1740	o-Anisidine, 5-chloro-	79, 31.6
930	Cyclohexylamine, N-[2-(p-chlorophenoxy)ethyl]-	86*
1578	Diethylamine, N-methyl-2,2'-bis(pentachlorophenoxy)-	35
	Amine-Heterocyclic Compounds	
1980	Quinoxaline, 5-amino-6,7-dimethoxy-	70
1483	s-Triazine, 2,4-diamino-6-(2-ethoxyethyl)-	61
	Ester-Halides	
1497	Acetic acid, (2,4-dichlorophenoxy)-, hexaester with inositol	-118
2533	Enanthic acid, α-(2,4-dichlorophenoxy)-, ethyl ester	-42
	Halide-Quaternary Nitrogen Compounds	
	Ammonium compounds.	
1581	benzylethylmethyl[2-(pentachlorophenoxy)ethyl] ----- methyl sulfate	67.6
2056	(p-chlorobenzyl)dimethyl{2-[2-(p-1,1,3,3-tetramethylbutyl-phenoxy)ethoxy]ethyl}----- chloride	85*
	Heterocyclic-Nitro Compounds	
2300	Quinoline, 6-methoxy-5-nitro-	68.7
2301	-----, 6-methoxy-8-nitro-	72.7

TABLE II

Code No.	Classification and Name	Repellency Index
	ETHERS	
	Disubstituted	
	Hydrazone-Phenols	
1963	Acetophenone, 4-hydroxy-3-methoxy-, phenylhydrazone	43
1873	o-Vanillin, phenylhydrazone	83
	Miscellaneous	
1802	Acetophenone, 4-hydroxy-3-methoxy-	34
1037	Ammonium compound. benzyl[3-(p-cyclohexylphenoxy)-2-hydroxypropyl]bis (2-hydroxyethyl) ----- chloride	-21
1941	Benzophenone, 5,5'-dichloro-2,2'-dimethoxy-	-5
2132	Carbanilic acid, p-methoxy-, m-diethylaminophenyl ester	-13
1336	Cresol, α-amino-, hydrochloride	33
1944	o-Cresol, α,α'-oxybis[3,5-dichloro-	89*
2369	Stearic acid, x-(3-sulfo-p-phenetyl)-, disodium salt	29
854	2-Thiazoline, 2-[2-(2-butoxyethoxy)ethylmercapto]-	76
862	-----, 2-(2-phenoxyethylmercapto)-	34
775	Urea, 1-(5-chloro-2-methoxyphenyl)-2-thio-	(T)
1754	Vanillin, thiosemicarbazone	5.5
1871	o-Vanillin, semicarbazone	-103
	Polysubstituted	
2376	m-Arsanilic acid, 4-(2-hydroxypropoxy)-, monosodium salt	31
1149	Brucine	81
1538	Nicotinonitrile, 4-(ethoxymethyl)-1,2-dihydro-6-methyl-2-oxo-	60
694	Pyrrolidinium compound. 1-[2-(2-butoxyethoxy)ethyl]-1-methyl-2-(3-pyridyl) ----- p-toluenesulfonate	70
855	2-Thiazoline, 2-[2-(2-chloroethoxy)ethylmercapto]-	86*
	GUANIDINES	
	Unsubstituted	
14	Benzimidazole, 2-amino-	76
473, 158	Guanidine, mononitrate	57, 67
722	monoreineckate	-35
2387, 1922	monothiocyanate	71, 79
903	salt with 1 f. wt. of 4,6-dinitro-o-cresol	89*, (T)
472, 137	-----, 1,3-diphenyl-	50.5, 82.7
258	salt with 1/2 f. wt. phthalic acid (Guantal)	76.5
139, 466	-----, 1,3-di-o-tolyl-	35, 79.5
2390	-----, dodecyl-, monohydrobromide	90*
2262	monohydrochloride	66
161, 476	phenyl-, monocarbonate	91.6*, 92.6*
1096	-----, 1,2,3-triphenyl-	76
	Substituted	
1472	Acetanilide, p-(guanylsulfamyl)-	-94
1529	Arginine, salt with flavianic acid	-40

TABLE II

Code No.	Classification and Name	Repellency Index
	GUANIDINES	
	Substituted	
2161	Benzamide, N-(benzylguanyl)-, hydrochloride	65
478	-----, N-(cyanoguanyl)-	37, 32
256	Biguanide, 1-(2-biphenylyl)-	22.7, (T)
1655	-----, 1-phenyl-	80
359	monohydrochloride	86.8*
469	-----, 1-o-tolyl-	(waste)
2160	Carbamic acid, (phenylguanyl)-, ethyl ester	33
2687	Glycocyamine	6
2265	Guanidine, 1-amino-3-nitro-	48
1354	-----, 1-butyl-3-cyano-	93.5*
2162	-----, 1-(p-chlorophenyl)-3-(4,6-diaminotriazin-2-yl)-	83
138, 477	-----, cyano-	48, 23
1358	-----, 1-cyano-3-cyclohexyl-	70
1357	-----, 1-cyano-3-dodecyl-	76
471	-----, 1-cyano-3-isopropyl-	89.5*
1356	-----, 1-cyano-3-octadecyl-	42
2163	-----, 1-(4,6-diaminotriazin-2-yl)-3-(2,5-dichlorophenyl)-	65
1355	-----, 1,1-dibutyl-3-cyano-	89*
481	Isomelamine, 1-phenyl-	(waste)
1471	Sulfaguanidine	-61
2159	Sulfanilic acid, N-guanyl-	-66
1488	Urea, 1-benzoyl-3-guanyl-	51
160, 468	-----, guanyl-, hemisulfate, monohydrate	91.7*, 22.5
1732, 1883	monosulfate	83, 70
	HALIDES	
	Unsubstituted	
	Bromides	
1814	Anthracene, 9-bromo-	-97
145	Benzene, 2-bromoethyl-	40.8
141	Cyclohexane, bromo-	-9
143	Decane, 1-bromo-	-115
147	Dodecane, 1-bromo-	-90.5
148	Hexadecane, 1-bromo-	-12
144	Hexane, 1-bromo-	-131
1005	-----, 1,6-dibromo-	63
140	Methane, bromotriphenyl-	34.6
334	Naphthalene, x,x-dibromo-	41.2
146	Octane, 1-bromo-	-16
149	Tetradecane, 1-bromo	5.5
1009	Toluene, 3,4,5-tribromo-	65
	Chlorides	
552	Aroclor 1242 (chlorinated biphenyl)	85.8*
553	Aroclor 1248 (chlorinated biphenyl)	90.4*
554	Aroclor 1254 (chlorinated biphenyl)	76.5
555	Aroclor 1262 (chlorinated biphenyl)	62.2
556	Aroclor 1270 (chlorinated biphenyl)	-21
551	Aroclor 5460 (chlorinated biphenyl)	7
1650	Benzene, 1,2,3,4-tetrachloro-	38
1647	-----, 1,2,4,5-tetrachloro-	-52
1649	-----, 1,2,3-trichloro-	59

TABLE II

Code No.	Classification and Name	Repellency Index
	HALIDES	
	Unsubstituted	
	Chlorides	79
212	Chlordan	42
955	Cumene, 2,4,6-trichloro-	19
2514	Cyclohexane, α-1,2,3,4,5,6-hexachloro-	-15
2513	β-	63
2515	γ-	88.6*
2512	δ-	57
2627	p-Cymene, x,x-dichloro-	
230	DD (mixture of 1,2-dichloropropane and 1,3-dichloropropene)	-88
2691	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-	49.7 (T)
917, 2700	Ethane, 1,1,1-trichloro-2,2-diphenyl-	9.8, 73
2097, 1813	Naphthalene, 1-chloro-	94*, 82.3
284	-----, polychloro-	-28
2626	Pinene, x,x,x,x,x,x,x,x-octachloro-	95.1*
2600, 1651	Propane, 1,3-dichloro-2,2-bis(chloromethyl)-	100*, 94*
236	-----, 1,2,3-trichloro-	-7
235	Propene, 3-chloro-2-methyl-	26.8
240	-----, 2,3-dichloro-	-90.5
2095, 157	-----, hexachloro-	83.4, -28
2096	-----, 1,2,3,3-tetrachloro-	74.5
151	Toluene, o,α-dichloro-	48.7
150	-----, p,α-dichloro-	72.1
153	-----, α,3,4-trichloro-	65.9
1001, 1681	Toxaphene	94*, 84
	Fluorides	-19
36	Toluene, α,α,α-trifluoro-	
	Iodides	85.8*
2550	Naphthalene, 2-iodo-	42.7
2549	Toluene, p-iodo-	
	Mixed	79.6
142	Propane, 1,2-dibromo-3-chloro-	
	Monosubstituted	
	Acid Halides	41
1826	Acetyl chloride, chlorodiphenyl-	30.8
154	Benzoyl chloride, o-chloro-	2
155	-----, p-chloro-	85.7*
152	-----, 2,4-dichloro-	62.4
156	-----, 3,4-dichloro-	
	Acids	
664	Acetic acid, difluoro-, potassium and sodium salts (mixture)	23.5
725	-----, iodo-, potassium salt	46.2
54	Benzoic acid, o-chloro-	50.7
321	copper(II) salt	67.1
343	lead(II) salt	-179
53	-----, p-chloro-	41

TABLE II

Code No.	Classification and Name	Repellency Index
	HALIDES	
	Monosubstituted	
	Acids	
340	Benzoic acid, p-chloro-, copper(II) salt	69.1
345	zinc salt	10
56	-----, 2,4-dichloro-	45
341	copper(II) salt	79.4
55	-----, 3,4-dichloro-	66.8
344	copper(II) salt	63.5
2519	Cinnamic acid, 2,4-dichloro-	17.8
1530	Crotonic acid, cis-α-bromo-	69
2109	-----, α-chloro-	45
1532	Hydrocinnamic acid, α-bromo-	53.5
1759	Propionic acid, α,β-dibromo-	94*
50	-----, pentachloro-	46
2456	Valeric acid, δ-bromo-	21
1531	-----, α-bromo-β-methyl-	35
	Alcohols	
1825	1-Indanol, 2-bromo-	61
232	2-Propanol, 1,3-dichloro-	75.7
	Amides	
991	Acetamide, α,α,α-trichloro-N-(2-chloroethyl)-	83
792	Acetanilide, α-chloro-	69.4
2496	-----, 2-chloro-4-phenyl-	96.6*
2434	-----, 2,3-dichloro-	1.6
317	Benzamide, o-chloro-	68.7
318	-----, p-chloro-	51.2
417	-----, o-chloro-N,N-bis(p-heptylphenyl)- and Benzamide, o-chloro-N-(p-heptylphenyl)-N-phenyl-	35.3
363	-----, o-chloro-N,N-bis(2-methylallyl)-	64.1
420	-----, o-chloro-N,N-diphenyl-	83.4
419	-----, p-chloro-N,N-diphenyl-	83.9
319	-----, 2,4-dichloro-	62.8
320	-----, 3,4-dichloro-	76.1
589	Malonanilide, p,p'-dichloro-	-1
	Amines	
1744	Aniline, p-bromo-	86*
2259	compound with 1 f. wt. 1,3,5-trinitrobenzene	100*
2257	-----, m-chloro-, compound with 1 f. wt. 1,3,5-trinitrobenzene	100*
2217	-----, o-chloro-, compound with 1 f. wt. 1,3,5-trinitrobenzene	100*
257, 1746	-----, p-chloro-	99*, 67.2
2311	compound with 1 f. wt. 1,3,5-trinitrobenzene	100*
1742	-----, 2,4-dichloro-	92*
2083	picrate	75
282	-----, 2,5-dichloro-	50.5
1576	-----, pentachloro-	47.5
2389	Diethylamine, 2,2'-dichloro-, hydrochloride	100*
2248	-----, 2,2'-dichloro-N-methyl-, hydrochloride	100*
2194	o-Phenylenediamine, 4-chloro-	70
2240	p-Phenylenediamine, N,N-bis(2-chloroethyl)-, dihydrochloride	95.9*
727	-----, 2-chloro-, dihydrochloride	80.2
2258	o-Toluidine, 6-chloro-, compound with 1 f. wt. 1,3,5-trinitrobenzene	100*

TABLE II

Code No.	Classification and Name	Repellency Index
	HALIDES	
	Monosubstituted	
	Esters	
828	Fatty acid(C_8-C_{18}, chiefly lauric acid), 2-chloroethyl ester	18
2629	Maleic acid, chloro-, β-bornyl α-methyl ester	94.1*
601	2-Naphthol, 1,3,6-tribromo-, acetate	-63
938	Phenol, o-chloro-, benzoate	51
1298	-----, x,x,x-trichloro-, acetate	35
	Ethers	
2542	Anisole, 2,4-dichloro-	85.6*
2556	-----, 2,3,4,5,6-pentachloro-	8.5 (T)
840	Ethane, 1-(2-chloroethoxy)-2-(p-1,1,3,3-tetramethylbutylphenoxy)-	-14
744	Ether, bis(p-bromophenyl)	42.1
823	-----, bis(2,4-dibromophenyl)	-213
769	-----, bis(2,4,6-tribromophenyl)	-137
2561	-----, p-chlorophenyl dodecyl	-122
2452	Phenetole, p, β-dibromo-	71.6
	Heterocyclic Compounds	
333	Benzothiazole, 2-chloro-	84
1579	Dibenzo-p-dioxin, octachloro-	-21
2692	Dieldrin	56.6 (T)
2068	Lepidine, α-chloro-	91.3*
1780	-----, 2-chloro-	86*
2237	Morpholine, 4-(2-chloroethyl)-, hydrochloride	100*
988	Phenoxathiin, x-chloro-	89*
	Pyridinium compounds.	
1290	3-bromo-1-dodecyl ----- bromide	81
680	1-(2,4-dichlorobenzyl)-3-(1-methyl-2-pyrrolidyl)----- chloride	89*
1075	Pyrimidine, 2,4-dichloro-6-methyl-	90*
	Pyrrolidinium compound.	
697	1-(2-chloroallyl)-1-methyl-2-(3-pyridyl) ----- p-toluenesulfonate	85.7*
1782	Quinaldine, 4-chloro-	84
1781, 1330	Quinoline, 2-chloro-	89*, 100*
2065, 1783	-----, 8-chloro-	100*, 90*
2048	picrate	83
1341, 1490	8-Quinolinol, 5,7-diiodo-	-12, -94
2586	1,3,5,7-Tetroxocane, 2,6-bis(trichloromethyl)-	-88
1795, 2188	Thiophene, 2,2,3,4,5,5, hexachloro-2,5-dihydro-	87.3*, 97*
2186, 1794	-----, 2,2,3,4,5,5-hexachlorotetrahydro-	97.9*, 99*
1796	-----, octachlorotetrahydro-	81
2191, 1793	-----, 2,3,4,5-tetrachloro-	99*, (T)
1792	-----, 2,3,5-trichloro-	60
	Imines	
616	Aniline, o-chloro-N-o-chlorobenzylidene-	1
617	-----, p-chloro-N-o-chlorobenzylidene-	55
618	-----, 2,4-dichloro-N-o-chlorobenzylidene-	30
	Iodonium Compounds	
	Iodonium compounds.	
2673	bis(p-chlorophenyl) ----- chloride	95.1*

TABLE II

Code No.	Classification and Name	Repellency Index
	HALIDES	
	Monosubstituted	
	Iodonium Compounds	
	Iodonium compounds.	
2674	bis(p-chlorophenyl) ----- iodide	50.2
2675	bis(p-chlorophenyl) ----- sulfate	84.5
2676	bis(p-iodophenyl) ----- chloride	69
2677	bis(p-iodophenyl) ----- iodide	90.2*
2678	bis(p-iodophenyl) ----- sulfate	68.6
	Ketones	
891	Acetophenone, p-bromo-	80
869	Anthraquinone, 2-chloro-	-4
1828	Chalcone, 4'-bromo-	19
1827	-----, 4'-bromo-4-chloro-	-28
1829	-----, 4'-chloro-	-24
819	2,5-Cyclohexadien-1-one, hexachloro-	83
581	Diphenoquinone, octachloro-	(T)
1984, 2121	1,4-Naphthoquinone, 2,3-dichloro-	54, 55
1830	Propiophenone, α-chloro- α,β-diphenyl-	-30
732	p-Quinone, 2,6-dichloro-	81.6
85	m-Terphenyl-3,4,3'',4''-tetrone, decachloro-	-119
	Nitro Compounds	
2487	Benzene, 1-bromo-2,4-dinitro-	88.4*
901,720	-----, 1-chloro-2,4-dinitro-	95.8*, 91*
826	-----, 1-chloro-2-nitro-	89*
827	-----, 1-chloro-3-nitro-	81
578	-----, 1-chloro-4-nitro-	83.3
2488	-----, 1,2-dichloro-4-nitro-	97.4*
580	-----, 2,4-dichloro-1-nitro-	68.4 (T)
2573	-----, 1-iodo-3-nitro-	100*
1573	-----, pentachloronitro-	38
1385	Propane, 1-chloro-1-nitro-	-65
1386	-----, 2-chloro-2-nitro-	16
1387	-----, 1,1-dichloro-1-nitro-	12
1840	Toluene, α-bromo-p-nitro-	72
890	-----, 2-chloro-6-nitro-	78
	Phenols	
1951	o,o'-Biphenol, 4,4'-dibromo-	50
1946	-----, 4,4',6,6'-tetrachloro-	98.3*
2638	Carvacrol, 5-chloro-	100*
182, 871	m-Cresol, 4-chloro-	71, -1
597	-----, 5,5'-methylenebis[4-chloro-	37
600, 820	o-Cresol, tetrabromo-	35, 48.3
1824	Hydroquinone, bromo-	48
1823	-----, tetrabromo-	34
203	1-Naphthol, 2,4-dichloro-	88*
592	2-Naphthol, 6-bromo-	17
1933	-----, 1,1'-methylenebis[6-bromo-	-21
195	Phenol, o-bromo-	23
243	-----, p-bromo-	13
528	copper(II) derivative	81.3
194	-----, 2-bromo-4-phenyl-	57
531	copper(II) derivative	69.3
193, 867	-----, 4-tert-butyl-2-chloro-	49, 78

TABLE II

Code No.	Classification and Name	Repellency Index
	HALIDES	
	Monosubstituted	
	Phenols	
196	Phenol, m-chloro-	42
364	-----, p-chloro-	40
560	copper(II) derivative	63
192	-----, 2-chloro-6-phenyl-	55
2593	-----, p-(x-chloro-α,α-dimethylbenzyl)-	81.8
197, 2453	-----, 4-chloro-2-phenyl-	32, 90.9*
529	copper(II) derivative	7
174	-----, 2,4-dibromo-	59
558	copper(II) derivative	67
171	-----, 2,6-dibromo-	23.5
48	-----, 3,5-dibromo-2,4,6-trichloro-	89.3*
165	-----, 2,4-dichloro-	63.1
559	copper(II) derivative	55
2597	-----, p-(x,x-dichloro-α,α-dimethylbenzyl)-	71
170	-----, o-iodo-	4.6
1299	-----, 2,2'-methylenebis[4-chloro-	75
1572, 1950	-----, 2,2'-methylenebis[4,6-dichloro-	31, 89.3*
1934	-----, 4,4'-methylenebis[2,6-dichloro-	-25.3
1430	-----, 2,2'-methylenebis[3,4,6-trichloro-	95*
1935	-----, 3,3'-methylenebis[2,4,6-trichloro-	20
1943	-----, 4,4'-methylenebis[2,3,6-trichloro-	13.5
177	-----, pentabromo-	48.6
780, 878	-----, pentachloro-	87*, 84
596	-----, x,x,x,x-tetrabromo-4,4'-isopropylidenedi-	10.5
1945	-----, 2',4,6,6'-tetrabromo-2,4'-methylenedi-	76
912	-----, 2,3,4,5-tetrachloro-	85*
178, 821	-----, 2,4,6-tribromo-	37, 37.4
561	copper(II) derivative	44.4
180	-----, 2,4,6-trichloro-	0.7
453	copper(II) derivative	61
436	sodium derivative	40
1574	-----, 2,2'-(2,2,2-trichloroethylidene)bis[4,6-dichloro-	73.4
20	-----, 2,4,6-triiodo-	25
1947	-----, 4,4'-trimethylenebis[2,6-dibromo-	12.5
408	Thymol, 6-chloro-	71
990	-----, 6-chloro-2-octyl-	88*
993	3,5-Xylenol, 4-chloro-	68
	Phosphorus Compounds	
1217	Benzenephosphonic acid, p-chloro-	11
1211	diethyl ester	71
1215	-----, 3,4-dichloro-	43
1212	diethyl ester	83
1191	Ethanephosphonic acid, bis(p-chlorophenyl) ester	78
1210	Methanephosphonic acid, trichloro-, diethyl ester	69
1219	Phosphine oxide, tris(p-chlorophenyl)-	81.1
2359	Phosphinic acid, phenyl(trichloromethyl)-, ethyl ester	60
	Phosphonium compounds.	
2249	(2-chloroethyl)triethyl ----- iodide	86.6*
1432	(3,4-dichlorobenzyl)triphenyl ----- chloride	88*
1183, 386	Phosphonic acid, tris(2-chloroethyl) ester	71, 60
1213	tris(o-chlorophenyl) ester	61

TABLE II

Code No.	Classification and Name	Repellency Index
	HALIDES	
	Monosubstituted	
	Phosphorus Compounds	
1216	Phosphoric acid, tris(2,4,6-trichlorophenyl) ester	61
2325, 1120	Pyrophosphoric acid, tetrakis(2-chloroethyl) ester	63, 58.4
2328	Tetraphosphoric acid, bis(2-chloroethyl) ester	72.7
1121	hexakis(2-chloroethyl) ester	68
	Quaternary Nitrogen Compounds	
	Ammonium compounds.	
1459	alkyl(3,4-dichlorobenzyl)dimethyl ----- pentasulfide (alkyl = C_8-C_{18})	77.6
2239	bis(2-chloroethyl)ethylvinyl ----- chloride	74
1296	(x,x-dichlorobenzyl)dodecyldimethyl ----- chloride	-87
2671	(x-kerylbenzyl)trimethyl ----- chloride	86.9*
1660	tributyl(o-chlorobenzyl) ----- chloride	80
1605	trimethyloctadecyl ----- pentachlorophenate	93.1*
2235	tris(2-chloroethyl)ethyl ----- chloride	88.6*
	Sulfides	
2633	Disulfide, bis(2-chloroisopropyl)	100*
739, 2547	Sulfide, bis(p-chlorophenyl)	-49, 82
	Sulfonamides	
1431	Benzenesulfonamide, 3,4-dichloro-N-methyl-	97.8*
2428	-----, 2,3,4,5-tetrachloro-N-methyl-	76
	Sulfones	
2238	Sulfone, bis(2-chloroethyl)	100*
2532	-----, bis(2,4-dichlorobenzyl)	-58
1080, 992 1363, 2264	-----, chloromethyl p-chlorophenyl	58, 80, 69, 77
	Sulfonic Acids	
1710	Benzenesulfonic acid, p-chloro-	-10
1709	ammonium salt	-1
579	p-Toluenesulfonic acid, 2-chloro-, sodium salt	42
	Thioacids	
563	Benzoic acid, o-chlorothiol-	15
564	-----, p-chlorothiol-	-8
567	-----, 2,4-dichlorothiol-	44
568	-----, 3,4-dichlorothiol-	40.5
	Thioureas	
636	Carbanilide, 2,2'-dichlorothio-	43.6
1156	-----, thio[3,3'-bis(trichloromethyl)]-	89*
2138	Urea, 1-(p-bromophenyl)-2-thio-	74
637	-----, 1,1'-(4-chloro-o-phenylene)bis[2-thio-	92* (T)
634	-----, 1-(m-chlorophenyl)-2-thio-	91.5*
633	-----, 1-(o-chlorophenyl)-2-thio-	(T)
635	-----, 1-(p-chlorophenyl)-2-thio-	(T)
1077, 770 2340	-----, 1-(3-chloro-o-tolyl)-2-thio-	(T)
	Miscellaneous	
961	Acetonitrile, (p-chlorophenyl)-	84

TABLE II

Code No.	Classification and Name	Repellency Index
	HALIDES	
	Monosubstituted	
	Miscellaneous	
1756	Benzaldehyde, p-chloro-, thiosemicarbazone	28
2110	-----, 2,4-dichloro-	68
2236	Diethylamine, 2,2'-dichloro-N-methyl-, N-oxide, hydrochloride	100*
27	Hydrazine, (2,5-dichlorophenyl)-	47
2279	Pyridine, 2-(2-mercaptoethyl)-, picrate	95.9*
2557	p-Toluenesulfonic acid, pentachlorophenyl ester	-35
	Disubstituted	
	Acid-Amines	
1097	Anthranilic acid, 5-bromo-	34
1711, 1512	-----, 5-chloro-	18, 40
	Acid-Esters	
1498	Salicylic acid, 5-bromo-, acetate	70
1499	-----, 5-iodo-, acetate	72.5
	Acid-Ethers	
2520	Acetic acid, (m-chlorophenoxy)-	73.9
2521	-----, (o-chlorophenoxy)-	41.2
2531	-----, (p-chlorophenoxy)(p-chlorophenyl)-	64.4
2530	-----, (p-chlorophenyl)(2,4-dichlorophenoxy)-	89.6*
2526	-----, (2,4-dichloro-1-naphthoxy)-	48.7
1644	-----, (2,4-dichlorophenoxy)-	66
2522	-----, (2,4,6-trichlorophenoxy)-	75.7
2529	Enanthic acid, α-(2,4-dichlorophenoxy)-	33.7
	Acid-Nitro Compounds	
2534	Benzoic acid, 2-bromo-3-nitro-	15.8
2535	ammonium salt	22
2536	-----, 2-bromo-5-nitro-	36.3
2537	ammonium salt	78.6
2538	-----, 4-bromo-3-nitro-	67.6
	Acid-Phenols	
607	2-Naphthoic acid, 1-bromo-3-hydroxy-	76.7
1500	Propionic acid, β-(4-hydroxy-3,5-diiodophenyl)-α-phenyl-	50
	Alcohol-Imines	
613	Ethanol, 2-(m-chlorophenylimino)-1,2-diphenyl-	-15
614	-----, 2-(p-chlorophenylimino)-1,2-diphenyl-	-37
	Amide-Esters	
362	Benzoic acid, o-chloro-, ester with o-chloro-N-(2-hydroxy-tert-butyl)benzamide	75.7
602	Malonanilic acid, 2,4-dichloro-, ethyl ester	-21
	Amide-Ethers	
2539	m-Acetotoluidide, $\alpha^3,\alpha^3,\alpha^3$-trifluoro-α-(2,4,5-trichlorophenoxy)-	81.9
418	Benzamide, o-chloro-N-(p-isopropoxyphenyl)-N-phenyl-	61.6

TABLE II

Code No.	Classification and Name	Repellency Index
	HALIDES	
	Disubstituted	
	Amide-Nitro Compounds	
591	Benzanilide, 2'-chloro-4-nitro-	-110
624	-----, 3'-chloro-4-nitro-	-10
625	-----, 4'-chloro-4-nitro-	-143
	Amide-Phenols	
627	2-Naphthanilide, 2'-chloro-3-hydroxy-	-156
628	-----, 2',4'-dichloro-3-hydroxy-	-6
	Amine-Ethers	
1703	Aniline, 3-chloro-4-phenoxy-	87.5*
1740, 285	o-Anisidine, 5-chloro-	31.6, 79
930	Cyclohexylamine, N-[2-(p-chlorophenoxyethyl)-	86*
1578	Diethylamine, N-methyl-2,2'-bis(pentachlorophenoxy)-	35
	Amine-Heterocyclic Compounds	
366	Pyrimidine, 2-chloro-4-dimethylamino-6-methyl-	(T)
2282	-----, 4-chloro-2-dimethylamino-6-methyl-, acetate	83.2
2392	Quinoline, 7-chloro-4-(4-diethylamino-1-methylbutylamino)-, diphosphate	82
	Amine-Ketones	
2397	Anthraquinone, 1-amino-5-chloro-	-72
2398	-----, 1-amino-6-chloro-	-13
2399	-----, 1-amino-8-chloro-	-8
2395	-----, 1-amino-2,4-dibromo-	-23
2396	-----, 2-amino-1,3-dibromo-	-88
	Amine-Nitro Compounds	
369	Aniline, 2-bromo-4-nitro-	67.7
368	-----, 4-bromo-2-nitro-	59.4
998, 415	-----, 2-chloro-4-nitro-	68, 67.8, 76, 67.6
409	-----, 4-chloro-2-nitro-	34, 34.3
1748	-----, 2,6-dichloro-4-nitro-	76
371	p-Toluidine, N-(5-chloro-2,4-dinitrophenyl)-	-21.7
	Amine-Phenols	
1942	o-Cresol, 6,6'-methylenebis[4-chloro-α-dimethylamino-	95*
173	Phenol, 4-amino-2,6-dibromo-	-134
1570	-----, 3-amino-2,4,5,6-tetrachloro-	73
	Ester-Ethers	
1497	Acetic acid, (2,4-dichlorophenoxy)-, hexaester with inositol	-118
2533	Enanthic acid, α-(2,4-dichlorophenoxy)-, ethyl ester	-42
	Ether-Quaternary Nitrogen Compounds	
	Ammonium compounds,	
2056	(p-chlorobenzyl)dimethyl{2-[2-(p-1,1,3,3-tetramethylbutylphenoxy)ethoxy]ethyl} ----- chloride	85*
1581	benzylethylmethyl[2-(pentachlorophenoxy)ethyl] ----- methyl sulfate	67.6
	Imine-Phenols	
620	o-Cresol, α-(m-chlorophenylimino)-	-28

TABLE II

Code No.	Classification and Name	Repellency Index
	HALIDES	
	Disubstituted	
	Imine-Phenols	
619	o-Cresol, α-(o-chlorophenylimino)-	40
621	-----, α-(p-chlorophenylimino)-	73
623	-----, 4,6-dibromo-α-(o-chlorophenylimino)-	-136
622	-----, α-(2,5-dichlorophenylimino)-	-16
	Ketone-Nitro Compounds	
1843	Butyrophenone, α-bromo-γ-nitro-β-(p-nitrophenyl)-	-58
1844	-----, γ-bromo-γ-nitro-β-phenyl-	13
1845	-----, p-chloro-γ-nitro-β-phenyl-	53
2113	-----, p,α-dibromo-β-(p-chlorophenyl)-γ-nitro-γ-phenyl-	13
2114	-----, p,α-dibromo-γ-nitro-β,γ-diphenyl-	20
1842	Ketone, p-chlorophenyl 2-nitro-3-phenylcyclopropyl	18
	Ketone-Phenols	
1938	Benzophenone, 5,5'-dichloro-2,2'-dihydroxy-	21.5
1937	-----, 3,3',5,5'-tetrachloro-2,2'-dihydroxy-	0
1329	Quinizarin, 2-chloro-	-30
735	p-Quinone, 2,5-dichloro-3,6-dihydroxy-	-14.5
	Nitro-Phenols	
49	Phenol, 2-chloro-4,6-dinitro-	72.2
167	-----, 4-chloro-2,6-dinitro-	74.2, 74
51	-----, 2-chloro-4-nitro-	35
176	-----, 2,6-dibromo-4-nitro-	84
2591	-----, p-(x,x-dichloro-α,α-dimethyl-x-nitrobenzyl)-	35
172	-----, 2,6-dichloro-4-nitro-	88*
	Nitro-Sulfides	
2	Disulfide, bis(4-chloro-2-nitrophenyl)	30
742	Sulfide, bis(2-chloro-4-nitrophenyl)	40
1327	-----, bis(4-chloro-2-nitrophenyl)	-40
718	-----, 2-chloroethyl o-nitrophenyl	73
1090	-----, 2-chloroethyl p-nitrophenyl	88.5*
	Phenol-Sulfides	
1939	Phenol, 2,2'-thiobis[4-bromo-	95.2*
1940,1429	-----, 2,2'-thiobis[4-chloro-	82, 90.5*
1932	-----, 2,2'-thiobis[4,6-dichloro-	75.2
1952	-----, 2,2'-thiobis[3,4,6-trichloro-	95*
	Miscellaneous	
1901	Acetanilide, o-chloro-	9
2620	Acetic acid, chloro-, ester with 2-isobornylmercapto-ethanol	89.9*
2615	2-nitroisobutyl ester	95.2*
977	tetrahydrofurfuryl ester	80
953	-----, thiocyano-, x-chloroisobornyl ester	56
1658	Benzoic acid, 5-chloro-2-(1-hydroxyethoxy)-, lactone	86*
1941	Benzophenone, 5,5'-dichloro-2,2'-dimethoxy-	-5
1865	Coumarin, 6-chloro-	85*
1944	o-Cresol, α,α'-oxybis[3,5-dichloro-	89*
2617	5-m-Dioxanol, 2-(o-chlorophenyl)-	53.2
1855	Formamide, α-(2,6-dichloro-4-hydroxyphenylazo)-	25
1841	Hydratroponitrile, β-(p-chlorobenzoyl)-	-48

TABLE II

Code No.	Classification and Name	Repellency Index
	HALIDES	
	Disubstituted	
	Miscellaneous	
2489	Isatin, 5,7-dichloro-	86.3*
1810	Ketone, 5-chloro-2-thienyl methyl, semicarbazone	69
2108	Mucobromic acid	47
1949	Phenol, p,p'-sulfinylbis[3-chloro-	-3
2585	2-Propanol, 1,1,1-trichloro-3-nitro-	100*
1966	Pyrazole, 1-(p-chlorophenyl)-3,5-dimethyl-4-nitroso-	100*
2321	Pyrophosphoric acid, bis(cyclic ester with 3-chloro-1,2-propanediol) and polymers	86.5*
2490	Quinoline, 8-chloro-5-nitro-	96.1*
1682	5-Quinolinesulfonic acid, 8-hydroxy-7-iodo-	61
1337, 1491	8-Quinolinol, 5-chloro-7-iodo-	5, 60
1766a	Salicylaldehyde, 5-chloro-, thiosemicarbazone	12
857	2-Thiazoline, 2-(2,4,6-trichlorobenzylmercapto)-	84
775	Urea, 1-(5-chloro-2-methoxyphenyl)-2-thio-	(T)
	Polysubstituted	
2162	Guanidine, 1-(p-chlorophenyl)-3-(4,6-diaminotriazin-2-yl)-	83
2163	-----, 1-(4,6-diaminotriazin-2-yl)-3-(2,5-dichlorophenyl)-	65
1846	Hydrocinnamic acid, α-(α-bromophenacyl)-β-nitro-	38.7
2555	4-Pyrone, 2-(chloromethyl)-5-hydroxy-	87.6*
855	2-Thiazoline, 2-[2-(2-chloroethoxy)ethylmercapto]-	86*
	HETEROCYCLIC COMPOUNDS	
	Nitrogen	
2020	Acetanilide, p-(8-hydroxy-5-quinolylazo)-	17
2411	Acetic acid, (4,6-diamino-s-triazin-2-ylmercapto)-, sodium salt	2
1909	Acridine	86*
2012	compound with 1 f. wt. 1,3,5-trinitrobenzene	95.5*
2009	hydrochloride, compound with 1/2 f. wt. mercury(II) chloride	100*
2657	-----, 9-amino-, monohydrochloride, monohydrate	88.9*
2541	Acrylic acid, β-(5-methyl-2-pyridylamino)-	48.3
399	Allantoin	-70.5
1907	Alloxan	-18
1108	monohydrate	24
2183	Allylamine, picrolonate	95*
470	Ammelide, dithio-	65.9
1506	Antipyrine, 4-amino-	80
2697	-----, 4,4'-(p-dimethylaminobenzylidene)di-, dihydrochloride	91.7*
1539	Arecoline, hydrochloride	81
2408	Arsanilic acid, N-(4,6-diamino-s-triazin-2-yl), sesquisodium salt, dihydrate	-2
610	Barbituric acid, 5,5'-salicylidenedi-	-15
309	-----, 2-thio-	52
455	disodium derivative	69
2393	Basic Orange 3RN	84
14	Benzimidazole, 2-amino-	76

TABLE II

Code No.	Classification and Name	Repellency Index
	HETEROCYCLIC COMPOUNDS	
	Nitrogen	
16	Benzimidazole, 5-methyl-	95*
15	-----, 6-nitro-	87.5*
2689	Benzoic acid, p-(2,4-diamino-6-hydroxy-5-pyrimidylazo)-	-33
1726, 1975		
405, 200	1H-Benzotriazole	38.7, 70, 47.9
1478	Benzyl alcohol, o-(4,6-diamino-s-triazin-2-yl)-	31
1508	[4,4'-Bi-3-pyrazoline]-5,5'-dione, 2,2',3,3'-tetramethyl-1,1'-diphenyl-	49
335, 2061	Carbazole	-7.5, -113
2080	picrate	94.8*
2277	-----, 9-ethyl-, picrate	75.2
1277	-----, 9-nitroso-	57
1527	-----, 1,3,6,8-tetranitro-	-44
989	-----, 9-vinyl-	(T)
1546	Carbostyril, 4-methyl-	58
2081	picrate	89.3*
1912	Cinchophen	72
2036	hydrochloride	47
2038	picrate	86.2*
2462	s-Collidine	56.7
2011	compound with 1 f. wt. mercury(II) chloride, hydrochloride	94*
1958	picrate	87*
1700	Crotonanilide, β-antipyrylamino-	67
2288	Cyanuric acid	-160
1880	dihydrate	20
1596	2,4-Diazabicyclo[3.3.1]nonane-3-thione	8.2
2587	Glutarimide, α,γ-dicyano-β-methyl-β-p-tolyl-	5.5
2416	-----, β-[2-(3,5-dimethyl-2-oxocyclohexyl)-2-hydroxyethyl]-	100*
1533	Gramine	89.5*
2162	Guanidine, 1-(p-chlorophenyl)-3-(4,6-diaminotriazin-2-yl)-	83
2163	-----, 1-(4,6-diaminotriazin-2-yl)-3-(2,5-dichlorophenyl)-	65
1913	Hexamethylenetetramine	7.5
2023	allyl iodide	75
2076	compound with 1 f. wt. mercury(II) chloride	87.5*
2050	monooxalate	16
2002	monopicrate	72
330	Hydantoin, 1-benzoyl-2-thio-	21.8
329	-----, 5-benzylidene-2-thio-	70.1
1445	-----, 1,3-dichloro-5,5-dimethyl-	83
1444	-----, 1,3-dichloro-5-isobutyl-5-methyl-	72
1625,1685,1174	2-Imidazolidinethione	58.5, 60, 71
2193, 1704	2-Imidazoline, 1-(2-butylaminoethyl)-2-hendecyl-	90.7*, 85.6*
2424	2-Imidazoline-1-ethanol, 2-(x-heptadecenyl)-	65
737	Indigo carmine	5.3
1809, 2184	Indole, 2-phenyl-	85.1*, 100*
1961	picrate	96*
1808	3-Indolecarboxaldehyde	-14
1999	oxime	54, 57
2489	Isatin, 5,7-dichloro-	86.3*

TABLE II

Code No.	Classification and Name	Repellency Index
	HETEROCYCLIC COMPOUNDS	
	Nitrogen	
481	Isomelamine, 1-phenyl-	(waste)
1443	Isoquinoline, picrate	94*
2431	salt with 4,6-dinitro-o-cresol	95.4*
1838	-----, 1,2,3,4-tetrahydro-	92*
	Isoquinolinium compounds.	
1724, 1293	2-dodecyl ----- bromide	77, 90*
1455	2-dodecyl ----- chloride	93*, 92*
1292	2-dodecyl ----- 2,4-dichlorophenate	1
1461	2-dodecyl ----- pentasulfide	65
2166	2-dodecyl ----- thiocyanate	76
1442, 685	2-methyl ----- iodide	83
2200	2-methyl ----- methyl sulfate	77
2142	Isothiocyanic acid, ester with N-(2-pyrimidyl)-1-phenol-4-sulfonamide	-59
1917	Lepidine, picrate	79.8
2068	-----, α-chloro-	91.3*
1780	-----, 2-chloro-	86*
	Lepidinium compound.	
2195	1-methyl ----- methylsulfate	75.6
2067	2,4-Lutidine	35
1583	picrate	92*
2006	2,6-Lutidine, compound with 1 f. wt. mercury(II) chloride, hydrochloride	96*
1594	picrate	88*
136,474	Melamine	37.3, 33
2338	monometaphosphate	34
1698	-----, N^2,N^2,N^4,N^6-tetrakis(aminomethyl)-	18
787	Meleimide, N-phenyl-	96*
695	Nicotine (bentonite diluent)	98*
704	compound with 1/2 f. wt. cadmium p-nitrobenzoate	95.7*
703	compound with 1/3 f. wt. chromium(III) salicylate	86.3*
705	compound with 1 f. wt. cobalt(II) oxalate	97.9*
707	compound with 1/2 f. wt. cobalt(II) picrate	99*
706	compound with 1/2 f. wt. copper(II) dichromate	72.5
698	compound with 1/2 f. wt. copper(II) fumarate	100*
699	compound with 1 f. wt. copper(II) phthalate	92*
681	compound with 1/3 f. wt. iron(III) picrate	90*
700	compound with 1/2 f. wt. manganese(II) p-nitrobenzoate	99*
696	compound with 1/2 f. wt. manganese(II) picrate	89.7*
2078	compound with 1 f. wt. mercury(II) chloride	97.6*
2260	compound with 1 f. wt. 1,3,5-trinitrobenzene	100*
2079	picrate	96*
2429	salt with 4,6-dinitro-o-cresol	86*
	Nicotinium compounds.	
688	didodecyl ----- dipicrate	90*
691	didodecyl ----- dithiocyanate	86.7*
692	dimethyl ----- diiodide	70.7
1538	Nicotinonitrile, 4-(ethoxymethyl)-1,2-dihydro-6-methyl-2-oxo-	60
1010	β-Nicotyrine	49
1476	Phenol, o-(4,6-diamino-s-triazin-2-yl)-	34.3
1477	-----, 2-(4,6-diamino-s-triazin-2-yl)-6-nitro-	-31.5
1479	-----, o-[2-(4,6-diamino-s-triazin-2-yl)vinyl]-	69

TABLE II

Code No.	Classification and Name	Repellency Index
	HETEROCYCLIC COMPOUNDS	
	Nitrogen	
1480	1-Phenol-2-sulfonic acid, 4-(4,6-diamino-s-triazin-2-yl)-	57
1926, 2075	Phenosafranine	90*, 88.5*
21	1,4-Phthalazinedione, 5-amino-2,3-dihydro-	-35
2295	-----, 2,3-dihydro-	38
1492, 1407	Phthalimide	18, 1.4
2610	-----, N-butyl-	100*
928	-----, N-sec-butyl-	89*
1102	-----, N-hydroxy-	94.9*
615, 1494	-----, N-phenyl-	-52, 17
2062	2-Picoline	54
2005	compound with 3/2 f. wt. mercury(II) chloride	97.5*
2007	compound with 2 f. wt. mercury(II) chloride, hydrochloride	93.7*
1449	picrate	97*
2270	-----, 6-amino-, picrate	100*
1586	-----, 5-ethyl-, picrate	90*
1450	2(3 and 4)-Picoline, picrate	91*
1957	3-Picoline, picrate	87*
2278	-----, 2-amino-, picrate	63.5
2269	4-Picoline, compound with 2 f. wt. mercury(II) chloride	100*
2268	picrate	86*
2280	-----, 2-amino-, picrate	100*
	2-Picolinium compounds.	
2208	1-ethyl ----- bromide	20
437, 693	1-methyl ----- iodide	74, 53
2222	1-methyl ----- methyl sulfate	59
	3-Picolinium compounds.	
2209	1-butyl ----- chloride	71
2212	1-decyl ----- chloride	78
2213	1-dodecyl ----- chloride	73
2207	1-ethyl ----- bromide	43.5
2210	1-hexyl ----- chloride	81
2197	1-methyl ----- methyl sulfate	45
2211	1-octyl ----- chloride	97*
2146	Picrolonic acid	73
2135	Pilocarpine, monohydrochloride	50
1886	Piperazine, 1,4-diphenyl-	45
2037	dihydrochloride	76
1536	2,5-Piperazinedione, 3,6-bis(guanylmercapto)-, dihydrochloride	56
2077	Piperidine, compound with 1 f. wt. mercury(II) chloride	100*
1555	picrate	80
1670	nitrate	66
407, 1906	-----, 1-benzoyl-	67, 40
2403	-----, 1-(10-diethylaminodecyl)-, salt with 2 f. wt. 2,4,6-trinitrobenzenesulfonic acid	85*
2402	-----, 1-(10-dipropylaminodecyl)-, salt with 2 f. wt. 2,4,6-trinitrobenzenesulfonic acid	98*
254, 402	1-Piperidinecarbodithioic acid, piperidine salt	83.7, 80
1534	Proline, 4-hydroxy-, reineckate	44.8
733	2,3-Pyrazinedicarboxylic acid	15.4

TABLE II

Code No.	Classification and Name	Repellency Index
	HETEROCYCLIC COMPOUNDS	
	Nitrogen	
1966	Pyrazole, 1-(p-chlorophenyl)-3,5-dimethyl-4-nitroso-	100*
1996	-----, 3,5-dimethyl-4-nitroso-1-p-tolyl-	100*
2518	5-Pyrazolone, 1,3-diphenyl-	-28
2355, 1528	-----, 3-methyl-1-phenyl-	4, -25
2004	Pyridine, compound with 1 f. wt. mercury(II) chloride	98*
2658	fluophosphate (HPF_6)	69.7
2028	monooxalate	63
1551	picrate	96*
2175	picrolonate	86.5*
2430	salt with 4,6-dinitro-o-cresol	94*
406	-----, 2-amino-	77.6
2271	-----, 2-amyl-, picrate	86.2*
2415	-----, 4-amyl-, picrate	71
2413	-----, 2-(1-butylamyl)-, picrate	57
2267	-----, 4-(1-butylamyl)-, picrate	94.3*
2663	-----, 3-(chloromercuri)-	100*
1790	-----, 2-(4,8-dimethyl-1,3,7-nonatrienyl)-	49
1788	-----, 2-[2-(2-furyl)vinyl]-	94*
2419	-----, 2-hexyl-, picrate	86*
2690	-----, 3-(hydroxymercuri)-, stearate	30.5
1334	-----, 2,2'-iminodi-	86*
1929	-----, 3-(3-nitro-5-pyrazolyl)-	86.5*
1789	-----, 2-(4-phenyl-1,3-butadienyl)-	95*
2272	-----, 2-vinyl-, picrate	98.9*
2285	2-Pyridineethanol, picrate	63
2286	2-Pyridinepropanol, picrate	89.2*
2420	4-Pyridinepropanol, picrate	77
1027	3-Pyridinesulfonic acid	27
	Pyridinium compounds.	
2150	1-(x-alkyl-x-naphthylmethyl) ----- chloride (alkyl = chiefly C_9) (Emcol 888)	56.7
2410, 1311	1-allyl ----- bromide	36, 57
439	2-amino-1-methyl ----- iodide	65
686	1-benzyl-3-(1-methyl-2-pyrrolidyl) ----- chloride	82.8
1290	3-bromo-1-dodecyl ----- bromide	81
682	1-butyl-3-(1-methyl-2-pyrrolidyl) ----- iodide	56
2590	(1-carboxymethyl) ----- chloride, ester with hydroabietyl alcohol	65.4
2592	1-(carboxymethyl) ----- chloride, isobornyl ester	88.7*
454	1-cyclohexyl ----- bromide	48, 48.5
451	1-decyl ----- bromide	75.7, 76
535	1-decyl ----- chloride	81.5
680	1-(2,4-dichlorobenzyl)-3-(1-methyl-2-pyrrolidyl) ----- chloride	89*
447	1-dodecyl ----- bromide	96.2*, 96*
286	1-dodecyl ----- chloride	82, 81.8
2492	1-dodecyl ----- 5-chloro-2-benzothiazolyl sulfide	88.1*
701	1-dodecyl-2-hexyl ----- p-toluenesulfonate	94.5*
679	1-dodecyl-3-(1-methyl-2-pyrrolidyl) ----- bromide	82.4
537	1-dodecyl-3-(1-methyl-2-pyrrolidyl) ----- chloride	75.3
444	1-hexadecyl ----- bromide	83.2, 83
538	1-hexadecyl ----- chloride	82.6
449	1-hexyl ----- bromide	76.8, 77
2491	1-(2-hydroxyethyl) ----- 2-benzothiazolyl sulfide	62.3

TABLE II

Code No.	Classification and Name	Repellency Index
	HETEROCYCLIC COMPOUNDS	
	Nitrogen	
	Pyridinium compounds.	
2151	1-(2-hydroxyethylcarbamylmethyl) ----- chloride, myristate	-24
689, 438	1-methyl ----- iodide	33.5, 84.5
2198	1-methyl ----- methyl sulfate	-2
687	1-methyl-3-(1-methyl-2-pyrrolidyl) ----- methyl sulfate	96*
690	3-(1-methyl-2-pyrrolidyl)-1-(p-nitrobenzyl) ----- chloride	95*
678	3-(1-methyl-2-pyrrolidyl)-1-octadecyl ----- iodide	84.7
536	1-octadecyl ----- chloride	79.8
450	1-octyl ----- bromide	88.7*, 89*
445	1-phenethyl ----- bromide	65
446	1-tetradecyl ----- bromide	86.9*, 87*
2199	1,2,4,6-tetramethyl ----- methyl sulfate	64
2220	1,2,4-trimethyl ----- methyl sulfate	52
683	1,2,6-trimethyl ----- iodide	80.3
2221	1,2,6-trimethyl ----- methylsulfate	72.7
452	1-(triphenylmethyl) ----- bromide	68.3
1885	Pyrimidine, 2-amino-	75
2029	picrate	90*
1398	-----, 5-aminohexahydro-5-methyl-1,3-bis(1-methylheptyl)-	93*
1696, 2185	-----, 1-butyl-2-hendecyl-1,4,5,6-tetrahydro-	94.3*, 95*
366	-----, 2-chloro-4-dimethylamino-6-methyl-	(T)
2282	-----, 4-chloro-2-dimethylamino-6-methyl-, acetate	83.2
1075	-----, 2,4-dichloro-6-methyl-	90*
1399	-----, hexahydro-5-methyl-1,3-bis(1-methylheptyl)-5-nitro-	-16
2693	-----, 2,4,5,6-tetraamino-, sulfate	60.4
2388	2-Pyrimidinethiol, 4,6-diamino-, sodium derivative	18
2688	4-Pyrimidol, 2,6-diamino-5-phenylazo-	85.4*
1638, 1469	Pyrrole, x-allyl-x,x-dimethyl-	27, 80
	Pyrrolidinium compounds.	
694	1-[2-(2-butoxyethoxy)ethyl]-1-methyl-2-(3-pyridyl) ----- p-toluenesulfonate	70
697	1-(2-chloroallyl)-1-methyl-2-(3-pyridyl) ----- p-toluenesulfonate	85.7*
1036	1-hexadecyl-1,2,5-trimethyl ----- chloride	23
1020	1-hexadecyl-1,2,5-trimethyl ----- iodide	90.8*
2297	Quinaldehyde	72.8
2064	Quinaldine	98.7*
2008	compound with 1/2 f. wt. copper(II) chloride, hydrochloride	78.5
2003	compound with 1 f. wt. mercury(II) chloride, hydrochloride	96*
2275	compound with 1 f. wt. 1,3,5-trinitrobenzene	96*
1955	picrate	98*
1782	-----, 4-chloro-	84
1785, 2059	-----, α-furfurylidene-	90*, 93*
1839	-----, 1,2,3,4-tetrahydro-	90*
	Quinaldinium compounds.	
2386	1-allyl ----- bromide	81
2205	1-decyl ----- chloride	82

TABLE II

Code No.	Classification and Name	Repellency Index
	HETEROCYCLIC COMPOUNDS	
	Nitrogen	
	Quinaldinium compounds.	
2204	1-dodecyl ----- chloride	61
1920	1-ethyl ----- iodide	76.5
2206	1-isoamyl ----- iodide	73
2201	1-methyl ----- methyl sulfate	61
2203	1-octyl ----- chloride	56
905, 2060	Quinoline	99*, 81
1666	nitrate	79
1552	picrate	96*
2173	picrolonate	81.7
1781, 1330	-----, 2-chloro-	89*, 100*
1783, 2065	-----, 8-chloro-	90*, 100*
2048	picrate	83
2392	-----, 7-chloro-4-(4-diethylamino-1-methylbutylamino)-, diphosphate	82
2490	-----, 8-chloro-5-nitro-	96.1*
2302	-----, 6-methoxy-	86.2*
2300	-----, 6-methoxy-5-nitro-	68.7
2301	-----, 6-methoxy-8-nitro-	72.7
2298	-----, 5-methyl-8-nitro-	83.1
2299	-----, 6-methyl-8-nitro-	88.8*
2296	-----, 8-nitro-	77.3
1784	-----, 2-(1-octenyl)-	57
1786	-----, 2-(1-pentenyl)-	100*
2466	-----, 1,2,3,4-tetrahydro-	97*
2303	-----, 1,2,3,4-tetrahydro-6-methoxy-	78
1342	5-Quinolinesulfonic acid, 8-hydroxy-	73
1682	-----, 8-hydroxy-7-iodo-	61
1340	8-Quinolinesulfonic acid	19
2499	4(1H)-Quinolinethione, 1-methyl-	94.9*
1713	Quinolinic acid	22
	Quinolinium compounds.	
1595	1-allyl-2,7-dimethyl ----- bromide	62.5
1629	1-dodecyl-2,7-dimethyl ----- chloride	70
1928	1-ethyl ----- iodide	92.5*, 92.2*
2171	1-isoamyl ----- iodide	68
2385, 1453 684	1-methyl ----- iodide	86*, 82.7, 84
2202	1-methyl ----- methyl sulfate	76
2196	1-octyl ----- chloride	84.3
1371	1,2,7-trimethyl ----- iodide	79
2219	1,2,7-trimethyl ----- methyl sulfate	55
1338, 940	8-Quinolinol, monosulfate	84, 52
1701	-----, 5-benzyl-	69
1337, 1491	-----, 5-chloro-7-iodo-	5, 60
1341, 1490	-----, 5,7-diiodo-	-94, -12
1540	Quinoxaline, 2-amino-	71
1980	-----, 5-amino-6,7-dimethoxy-	70
1889	-----, 2,3-dimethyl-	83
2033	picrate	88*
1541	6-Quinoxalinecarboxylic acid, 2-amino-	45
1969	6,7-Quinoxalinediol, monohydrochloride	-3
	Quinoxalinium compound.	
2224	1,2,3-trimethyl ----- methyl sulfate	76

TABLE II

Code No.	Classification and Name	Repellency Index
	HETEROCYCLIC COMPOUNDS	
	Nitrogen	
1787, 2063	2-Stilbazole	78, 87*
1404, 1350	Succinimide	27, 20
1374	-----, N-phenyl-	-34
1542	Sulfanilamide, N^1-2-quinoxalyl-	-40
2074	Tartrazine O	43
2187, 1702	2-Thiazoline, 5-methyl-2-[1-(2-methylallyl)-2-imidazolin-2-ylmethylmercapto]-	92*, 75
1307	m-Toluquinaldine	65.5
1368	picrate	93*
1487	s-Triazine, 2,4-diamino-6-amyl-	82
1483	-----, 2,4-diamino-6-(2-ethoxyethyl)-	61
1486	-----, 2,4-diamino-6-(m-nitrophenyl)-	73
1485	-----, 2,4-diamino-6-phenyl-	91.2*
1482	s-Triazine-2-acetonitrile, 4,6-diamino-	42
1481	s-Triazine-2-ethanesulfonic acid, 4,6-diamino-	7
475	s-Triazine-2-thiol, 4,6-diamino-	46
1170	s-Triazine-2(1H)-thione, 5-alkyltetrahydro- (alkyl = C_8-C_{18}, chiefly dodecyl)	18
1166	-----, 5-cyclohexyltetrahydro-	89*
1171	-----, tetrahydro-5-(2-hydroxyethyl)-	54
1474	1,2,4,1H-Triazole, 3-amino-5-phenyl-, mononitrate	35.8
1168	Uracil, 6-amino-2-thio-	-30
860	Urazole, 1-phenyl-3,5-dithio-	77
2436	Urea, 1,3-diantipyryl-	16
1475	-----, (5-heptadecyl-1,2,4,1H-triazol-3-yl)-	-73
1473	-----, (5-phenyl-1,2,4,4H-triazol-3-yl)-	-6
717	Uric acid	-68.1
	Nitrogen and Oxygen	
17	2-Benzoxazolethiol	56
1149	Brucine	81
1728	Gallocyanine	-13
1558	Morpholine, picrate	80
2237	-----, 4-(2-chloroethyl)-, hydrochloride	100*
1560	-----, 4-ethyl-, picrate	92*
1591	-----, 4-methyl-, picrate	90*
1632	-----, 4-phenyl-, picrate	85*
2380	-----, 4-{2-[2-(p-1,1,3,3-tetramethylbutylphenoxy) ethoxy]ethyl}-, hydrochloride	79
2669	-----, 4,4'-thiodimethylenedi-	74.3
2606	4-Morpholineacetic acid, isobornyl ester	69.7
66	4-Morpholinecarbodithioic acid, iron(III) salt	41.8
1177	4-Morpholinecarboxamide, N-allylthio-	81
2412	4-Morpholineethanol, picrate	80
	Morpholinium compounds.	
2226	4,4-dimethyl ----- methyl sulfate	62
2227	4-ethyl-4-methyl ----- methyl sulfate	33.5
2228	4-methyl-4-phenyl ----- methyl sulfate	44.5
2608	Oxazolidine, 4-ethyl-2,2-diisobutyl-	-32
159	2-Oxazolidone, 3-phenyl-	12
1510	2-Oxazoline, 2-hendecyl-	44
729	Resorufin	-34.5
2583	Urea, (4-morpholinylmethyl)-	80.7
1489	-----, (3-phenyl-1,2,4-oxadiazol-5-yl)-	42

TABLE II

Code No.	Classification and Name	Repellency Index
	HETEROCYCLIC COMPOUNDS	
	Nitrogen and Sulfur	
1022	Ammonium compound benzylhexadecyldimethyl ----- 2-benzothiazolyl sulfide	88*
84	Benzoic acid, thiol-, 2-benzothiazolyl ester	17
13	Benzothiazole, 6-amino-2-mercapto-	-210
333	-----, 2-chloro-	84
1332, 252	-----, 2,2'-dithiobis-	25, 16
1085	-----, 2-mercapto-7-phenyl-	23
260	2-Benzothiazolesulfenamide, N-cyclohexyl-	70
863	2(3H)-Benzothiazolethione, 3-methyl-	58
1228, 864 1229	1,2,4-Dithiazolidine-3-thione, 5-imino-	83.7, 84.8, 25
307, 1153	Phenothiazine	-2, 42
2665, 404	Rhodanine	87.1*, 45.8
410	Saccharin	20.8
479, 1470	1,3,5,2H-Thiadiazine-2-thione, 4,6-diamino-	58.2, 70.3
861	1,2,4-Thiadiazole, 3,5-bis(carbethoxymethylmercapto)-	27
865	-----, 3,5-bis(dodecylmercapto)-	-67
1353	-----, 3,5-bis(methylmercapto)-	91*
2659	1,3,6H-Thiazine-2-thiol, 4,6,6-trimethyl-	95.6*
287	Thiazole, 2-amino-	79
11	-----, 2-amino-4-(4-biphenylyl)-	-60
19	-----, 2-amino-4-methyl-, hydrochloride	75.7
101	-----, 2,2'-dithiobis[4,5-dimethyl- and Thiazole, 2,2'-dithiobis[4-ethyl-	75.4
2631, 106	2-Thiazolethiol, 4,5-dimethyl- and 2-Thiazolethiol, 4-ethyl-	88.3*, 68
12	-----, 4-phenyl-	64.3
1231, 288	2,4-Thiazolidinedione	45.1, 83.5
856	2-Thiazoline, 2-allylmercapto-	95*
854	-----, 2-[2-(2-butoxyethoxy)ethylmercapto]-	76
855	-----, 2-[2-(2-chloroethoxy)ethylmercapto]-	86*
853	-----, 2-(2-methylallylmercapto)-	95*
1702, 2187	-----, 5-methyl-2-[1-(2-methylallyl)-2-imidazolin-2-ylmethylmercapto]-	92*, 75
862	-----, 2-(2-phenoxyethylmercapto)-	34
857	-----, 2-(2,4,6-trichlorobenzylmercapto)-	84
	Oxygen	
977	Acetic acid, chloro-, tetrahydrofurfuryl ester	80
1654	-----, (1-hydroxyethoxy)phenyl-, lactone	29
967	-----, (1-hydroxyisopropoxy)phenyl-, lactone	35
933	Acrylic acid, tetrahydrofurfuryl ester	53
730	Acrylophenone, β-2-furyl-	56, 55.7
1869	2,4-dinitrophenylhydrazone	1
1658	Benzoic acid, 5-chloro-2-(1-hydroxyethoxy)-, lactone	86*
1111	1,2H-Benzopyran-3-carboxylic acid, 2-oxo-	97.1*
713	3-Buten-2-one, 4-(2-furyl)-	81, 80.7
1956	phenylhydrazone	69
224	Chelidonic acid, dibutyl ester	65.4
2106	Cineole	5
1331	Coumarilic acid	50
896, 2119 1760	Coumarin	88*, 86*, 93*

TABLE II

Code No.	Classification and Name	Repellency Index
	HETEROCYCLIC COMPOUNDS	
	Oxygen	
1865	Coumarin, 6-chloro-	85*
909, 1821	Dehydroacetic acid	74, 83.5
1579	Dibenzo-p-dioxin, octachloro-	-21
372	Dibenzofuran, 3-nitro-	-5
1401	3-Dibenzofuranamine	79
2692	Dieldrin	56.6 (T)
972	m-Dioxane, 5-ethyl-5-nitro-2-propenyl-	75.6
973	-----, 5-ethyl-5-nitro-2-propyl-	62
2164	-----, 5-methyl-4-(3,4-methylenedioxyphenyl)-	42
971	-----, 5-methyl-5-nitro-2-propenyl-	75
974	-----, 5-methyl-5-nitro-2-propyl-	41
2617	5-m-Dioxanol, 2-(o-chlorophenyl)-	53.2
1451	2-Furamide	65.4
1347	2-Furanacrylic acid, α-cyano-, ethyl ester	50
1438	2-Furanilide	67.5
2071	Furil, dioxime	59.3
1266, 2438	2-Furoic acid	66.2, 56.3
1440	copper(II) salt	66
2551	Furoin	40.3 (T)
I303	G-2510(Sorbitan, tetrabutyrate)	36
2570	Glucose, α(and β)-D-, pentacarbanilate	-101
2101, 923	Isosafrole	93.2*, 94.5*
784	Muconic acid, β,γ-dihydroxy-α,δ-diphenyl-, di-γ-lactone	-61
951	Naphthenic acid, tetrahydrofurfuryl ester	32
2504	1-Octadecanol, 9,10-epoxy-	-47
2135	Pilocarpine, monohydrochloride	50
880	Piperonal	46
1850	semicarbazone	-97
1755	thiosemicarbazone	70
1278	Piperonylcyclonene	11
1279	and Pyrethrins	-10
225	2H-Pyran-6-carboxylic acid, 3,4-dihydro-2,2-dimethyl-4-oxo-, butyl ester	58.1
1281	Pyrethrins and Toluene, α-[2-(2-butoxyethoxy)ethoxy]-4,5-methylenedioxy-2-propyl-	14
1788	Pyridine, 2-[2-(2-furyl)vinyl]-	94*
2555	4-Pyrone, 2-(chloromethyl)-5-hydroxy-	87.6*
1985	-----, 5-hydroxy-2-(hydroxymethyl)-	-94
2059,1785	Quinaldine, α-furfurylidene-	93*, 90*
2382	Rhodamine B Extra	83.4
2383	Rhodamine 6GDN	100*
2102	Safrole	71
2457	Stearic acid, x-(3-dibenzofuryl)-	-101
2506	-----, θ,ι-epoxy- (high melting isomer)	-147
2505	(low melting isomer)	-91.5
2586	1,3,5,7-Tetroxocane, 2,6-bis(trichloromethyl)-	-88
1280	Toluene, α-[2-(2-butoxyethoxy)ethoxy]-4,5-methylenedioxy-2-propyl-	20
1653	m-Toluic acid, 2-(1-hydroxyethoxy)-, lactone	67
2441	Vitamin C, ester with palmitic acid	-14
716	Xanthone	85.6*

TABLE II

Code No.	Classification and Name	Repellency Index
	HETEROCYCLIC COMPOUNDS	
	Oxygen and Sulfur	
1657	Benzoic acid, o-(1-hydroxyethylmercapto)-, lactone	55
293	Phenoxathiin	57
988	-----, x-chloro-	89*
2670	Pentaerythritol, disulfite(cyclic)	71.2
	Sulfur	
1837	Di-2-thenylamine	75
1965	Hydroxylamine, N-(2-thenyl)-, hydrochloride	100*
1810	Ketone, 5-chloro-2-thienyl methyl, semicarbazone	69
1803, 2192	-----, methyl 2-thienyl	100*, 88.8*
1811	oxime	51
1964	phenylhydrazone	71
2316	thiosemicarbazone	55 (T)
1008	-----, phenyl x-thienyl	91.2*
1805	-----, phenyl 2-thienyl	83
1804	1-Octadecanone, 1-(2-thienyl)-	-27
1335	Thiacoumarin	93*
673	Thianthrene, x,x-dimethyl-	50.5
1807	3-Thienyl thiophosphate [$(HS)_3P:O$], tri-	45
1800	3-Thienyl thiophosphate [$(HS)_3P:S$], tri-	-30
2190, 1801	Thiophene, trimer	91*, 83.2
1799	-----, 3-(allylmercapto)-	84
2189, 1798	-----, 3-(benzylmercapto)-	100*, 88.6*
1791	-----, 2,5-bis(1,1,3,3-tetramethylbutyl)-	-71
2188, 1795	-----, 2,2,3,4,5,5-hexachloro-2,5-dihydro-	97*, 87.3*
1794, 2186	-----, 2,2,3,4,5,5-hexachlorotetrahydro-	97.9*, 99*
1797	-----, 3-(isopropylmercapto)-	80
1796	-----, octachlorotetrahydro-	81
1793, 2191	-----, 2,3,4,5-tetrachloro-	(T), 99*
239	-----, tetrahydro-, 1,1-dioxide	52.1
237	-----, tetrahydro-2,4-dimethyl-, 1,1-dioxide	70
1792	-----, 2,3,5-trichloro-	60
2495	2-Thiopheneacetamide	60
2498	2-Thiophenecarboxaldehyde	-14
1603	thiosemicarbazone	90*
1806	2-Thiophenecarboxylic acid	30
2363	2-Thiophenesulfonic acid, sodium salt	20.5
2365	-----, 5-tert-butyl-, sodium salt	41
299, 2632	s-Trithiane	-18.2, -47
1648	-----, 2,4,6-tris(p-dimethylaminophenyl)-	-1
1652	-----, 2,4,6-tris(p-hydroxyphenyl)-	36
	Miscellaneous	
1981	1,3,2-Benzodioxastibiole, 2-hydroxy-	61
1094	2,5-Cyclohexadien-1-one, 2-(hydroxymercuri)-4-isonitro-6-nitro-, 2,4-anhydride	96*
1106	Phenazoselenonium compound, 10,10a-dihydro-3-(1-naphthylamino) ----- chloride	44
2321	Pyrophosphoric acid, bis(cyclic ester with 3-chloro-1,2-propanediol) and polymers	86.5*
2320	-----, bis(cyclic ester with 1,2-propanediol) and polymers	-38

TABLE II

Code No.	Classification and Name	Repellency Index
	HYDRAZIDES	
	Unsubstituted	
1897	Acetic acid, 2-phenylhydrazide	25
1508	[4,4'-Bi-3-pyrazoline]-5,5'-dione, 2,2',3,3'-tetramethyl-1,1'-diphenyl	49
2518	5-Pyrazolone, 1,3-diphenyl-	-28
1528, 2355	-----, 3-methyl-1-phenyl-	-25, 4
	Substituted	
18	Ammonium compound. (carboxymethyl)trimethyl ----- chloride, hydrazide	-275
1506	Antipyrine, 4-amino-	80
2697	-----, 4,4'-(p-dimethylaminobenzylidene)di-, dihydrochloride	91.7*
1923	Benzoic acid, p-nitro-, hydrazide	79.3
1700	Crotonanilide, β-antipyrylamino-	67
21	1,4-Phthalazinedione, 5-amino-2,3-dihydro-	-35
2295	-----, 2,3-dihydro-	38
2146	Picrolonic acid	73
2436	Urea, 1,3-diantipyryl-	16
	HYDRAZINES AND DERIVATIVES	
	Unsubstituted	
2232	Acetone, phenylhydrazone	45.5
1769	Acetophenone, phenylhydrazone	100*
25	Benzaldehyde, azine	70.5
1770	Cyclohexanone, phenylhydrazone	91*
1741	Hydrazone, monosulfate	91*
1887	-----, 1,1'-(4,4'-biphenylene)di-, dihydrochloride	46
1924	-----, (1-naphthyl)-, monohydrochloride	100*
1927	Hydrazobenzene	70.9
	Substituted	
1861	Acetone, 2,4-dinitrophenylhydrazone	27
1722	Acetophenone, 2,4-dinitrophenylhydrazone	15
1963	-----, 4-hydroxy-3-methoxy-, phenylhydrazone	43
1869	Acrylophenone, β-2-furyl-, 2,4-dinitrophenylhydrazone	1
2131	Bicarbamic acid, diethyl ester	-37
1858	2-Butanone, 2,4-dinitrophenylhydrazone	75
1956	3-Buten-2-one, 4-(2-furyl)-, phenylhydrazone	69
1931	Butyraldehyde, 2,4-dinitrophenylhydrazone	69.9
1962	2,5-Cresotaldehyde, phenylhydrazone	58
27	Hydrazone, (2,5-dichlorophenyl)-	47
1721	-----, (2,4-dinitrophenyl)-	64.7
2070	-----, (p-nitrophenyl)-	77.8
1964	Ketone, methyl 2-thienyl, phenylhydrazone	71
734	Succinic acid, dioxo-, phenylosazone, disodium salt	49.7
1873	o-Vanillin, phenylhydrazone	83
	HYDRAZONES	
	See Hydrazines and Derivatives	

TABLE II

Code No.	Classification and Name	Repellency Index
	HYDROCARBONS	
550, 866	Biphenyl	49.5, 69
1118	Cyclohexane, phenyl-	60
31	1-Hexene, 2-ethyl-	-182
1818	Methane, tri-o-tolyl-	-20
1403	Naphthalene, 1,4-dihydro-	48
851	-----, 2-methyl-	62
935	-----, methyl- and Naphthalene, polymethyl-	42
846	-----, 1,2,3,4-tetrahydro-	51.3
29	1-Octene	-37
30	2-Octene	-55
584	m-Terphenyl	17.5
583	o-Terphenyl	38
585	p-Terphenyl	0
	HYDROXAMIC ACIDS	
573	Naphthenohydroxamic acid	50
	HYDROXY DERIVATIVES OF HETEROCYCLIC COMPOUNDS	
2020	Acetanilide, p-(8-hydroxy-5-quinolylazo)-	17
2689	Benzoic acid, p-(2,4-diamino-6-hydroxy-5-pyrimidyl-azo)-	-33
1546	Carbostyril, 4-methyl-	58
2081	picrate	89.3*
2288	Cyanuric acid	-160
1880	dihydrate	20
2617	5-m-Dioxanol, 2-(o-chlorophenyl)-	53.2
1728	Gallocyanine	-13
1534	Proline, 4-hydroxy-, reineckate	44.8
2688	4-Pyrimidol, 2,6-diamino-5-phenylazo-	85.4*
2555	4-Pyrone, 2-(chloromethyl)-5-hydroxy-	87.6*
1985	-----, 5-hydroxy-2-(hydroxymethyl)-	-94
1342	5-Quinolinesulfonic acid, 8-hydroxy-	73
1682	-----, 8-hydroxy-7-iodo-	61
940, 1338	8-Quinolinol, monosulfate	52, 84
1701	-----, 5-benzyl-	69
1491, 1337	-----, 5-chloro-7-iodo-	5, 60
1969	6,7-Quinoxalinediol, monohydrochloride	-3
729	Resorufin	-34.5
2074	Tartrazine O	43
1168	Uracil, 6-amino-2-thio-	-30
2441	Vitamin C, ester with palmitic acid	-14
	HYDROXYLAMINES AND DERIVATIVES	
	Unsubstituted.	
400	Acetone, oxime	27.5
1717	Acetophenone, oxime	65
1891	Butyraldehyde, oxime	47
1720	Camphor, d-, oxime	54
2214, 1902		
1776	Cyclohexanone, oxime	83, 76, 75
1925	Enanthaldehyde, oxime	80.1
1893	Glyoxime, dimethyl-	56

TABLE II

Code No.	Classification and Name	Repellency Index
	HYDROXYLAMINES AND DERIVATIVES	
	Unsubstituted	
1719	Glyoxime, diphenyl-	59
1378	Hydroxylamine, hemisulfate	42
1381	hydrochloride	78.6
2304	Ketone, methyl 3-phenanthryl-, oxime	-1
1970	p-Quinone, dioxime	78
	Substituted	
726	Benzenesulfonamide, N-hydroxy-	65.5
1894	Benzoin, oxime	58
1879	2,3-Butanedione, 2-oxime	58
2071	Furil, dioxime	59.3
1731	Glyoxal, 1-phenyl-, 2-oxime	42.5
2371	2-oxime, sodium derivative	51
1095	Glyoxylanilide, oxime	62
728	Hydroxylamine, N-1-naphthyl-N-nitroso-, ammonium derivative	89.5*
1965	-----, N-(2-thenyl)-, hydrochloride	100*
1999	3-Indolecarboxaldehyde, oxime	57, 54
1811	Ketone, methyl 2-thienyl, oxime	51
1102	Phthalimide, N-hydroxy-	94.9*
1718	β-Resorcylaldehyde, oxime	-5
1908	Salicylaldehyde, oxime	63
710	Sebaconitrile, δ,ε-dioxo-, dioxime	17.1
	IMIDES	
	Unsubstituted	
910	Bicyclo[2.2.1]-5-heptene-2,3-dicarboximide, N-amyl-	64
904	-----, N-butyl-	65
981	1,2-Cyclohexanedicarboximide, N-butyl-	65
979	4-Cyclohexene-1,2-dicarboximide, N-allyl-	75
943	-----, N-butyl-	89*
980	-----, N-propyl-	66
787	Meleimide, N-phenyl-	96*
1407, 1492	Phthalimide	1.4, 18
2610	-----, N-butyl-	100*
928	-----, N-sec-butyl-	89*
1494, 615	-----, N-phenyl-	17, -52
1350, 1404	Succinimide	-27, 20
1374	-----, N-phenyl-	-34
	Substituted	
2587	Glutarimide, α,γ-dicyano-β-methyl-β-p-tolyl-	5.5
2416	-----, β-[2-(3,5-dimethyl-2-oxocyclohexyl)-2-hydroxyethyl]-	100*
1445	Hydantoin, 1,3-dichloro-5,5-dimethyl-	83
1444	-----, 1,3-dichloro-5-isobutyl-5-methyl-	72
1102	Phthalimide, N-hydroxy-	94.9*
2595	Succinimide, N-[(isobornyloxy)-tert-butyl]-	43.5

TABLE II

Code No.	Classification and Name	Repellency Index
	IMINES	
	Unsubstituted	
2182	Methylamine, N-benzylidene-, picrate	85.4*
2469	Octylamine, N-ethylidene-	64.3
	Substituted	
470	Ammelide, dithio-	65.9
616	Aniline, o-chloro-N-o-chlorobenzylidene-	1
617	-----, p-chloro-N-o-chlorobenzylidene-	55
618	-----, 2,4-dichloro-N-o-chlorobenzylidene-	30
620	o-Cresol, α-(m-chlorophenylimino)-	-28
619	-----, α-(o-chlorophenylimino)-	40
621	-----, α-(p-chlorophenylimino)-	73
623	-----, 4,6-dibromo-α-(o-chlorophenylimino)-	-136
622	-----, α-(2,5-dichlorophenylimino)-	-16
613	Ethanol, 2-(m-chlorophenylimino)-1,2-diphenyl-	-15
614	-----, 2-(p-chlorophenylimino)-1,2-diphenyl-	-37
1098, 403 2584	Glycinonitrile, N-methylene-	69, 88*, 75.4
481	Isomelamine, 1-phenyl-	(waste)
187	Phenol, p-benzylideneamino-	7.5
	INORGANIC COMPOUNDS	
2116	Ammonium fluophosphate (NH_4PF_6)	54
491	Ammonium phosphate [$(NH_4)_3PO_4$]	34
336	Ammonium sulfamate	-1.6
1745	Ammonium thiocyanate	73
1148	Cobalt(III) compound, triamminetrinitro- [$Co(NH_3)_3(NO_2)_3$]	69
1119	Copper(I) pyrophosphate ($Cu_2P_2O_7$), x-hydrate	2
115	Copper(II) selenate	54
119	Copper(II) selenocyanate	33
127	Copper(II) tellurate ($CuTeO_4$)	91*
116	Iron(III) selenate	59
128	Iron(III) tellurate [$Fe_2(TeO_4)_3$]	53
120	Lead(II) selenocyanate	(T)
2546	Lithium fluophosphate (Li_2PO_3F)	34
376	Phosphorus sulfide (P_2S_3)	(T)
375	Phosphorus sulfide (P_2S_5)	61.3
377	Phosphorus sulfide (P_4S_7)	34
2115	Potassium fluophosphate (KPF_6)	2
2544	Potassium fluophosphate (K_2PO_3F)	75.7
118	Potassium selenosulfate (K_2SeSO_3)	71
582	Potassium sodium metaphosphate [$H_6(PO_3)_6$]	10
2543	Sodium fluophosphate (Na_2PO_3F)	4
2149	Sodium fluosilicate (Na_2SiF_6)	98*
283	Sodium sulfide (NaHS), x-hydrate	7
1101	Strontium fluoborate [$Sr(BF_4)_2$]	73
390	Sulfamic acid	-2.3
117	Zinc selenate	57
121	Zinc selenocyanate	-19

TABLE II

Code No.	Classification and Name	Repellency Index
	IODONIUM COMPOUNDS	
	Iodonium compounds.	
2673	bis(p-chlorophenyl) ----- chloride	95.1*
2674	bis(p-chlorophenyl) ----- iodide	50.2
2675	bis(p-chlorophenyl) ----- sulfate	84.5
2676	bis(p-iodophenyl) ----- chloride	69
2677	bis(p-iodophenyl) ----- iodide	90.2*
2678	bis(p-iodophenyl) ----- sulfate	68.6
2679	diphenyl ----- chloride	87*
2680	diphenyl ----- iodide	93.6*, (T)
2681	diphenyl ----- triiodide	100*
	IRON COMPOUNDS**	
68	Carbamic acid, diethyldithio-, iron(III) salt	11
64	-----, diisopropyldithio-, iron(III) salt	-10
62	-----, ethylenebis[dithio-, iron(III) salt	22
66	4-Morpholinecarbodithioic acid, iron(III) salt	41.8
681	Nicotine, compound with 1/3 f. wt. iron(III) picrate	90*
	ISOCYANATES	
1758	Isocyanic acid, 2-naphthyl ester	22
	ISOTHIOCYANATES	
	See Thiocyanates	
	KETONES***	
	Unsubstituted	
	Monoketones	
1851	Acetophenone, picrate	86*
897	Benzophenone	77
2098	3-Buten-2-one	-24
921	Butyrophenone	58
711	Chalcone	73
942	Cyclohexanone, 2-cyclohexylidene-	73
1004	Desoxybenzoin	52
1006	Ketone, cyclohexyl phenyl	69
895	2-Tridecanone	70
	Polyketones	
712	1,3-Butanedione, 1-phenyl-	48
1778	copper(II) derivative	81
885	1,3-Indandione, 2-isovaleryl-	89*
217	-----, 2-pivalyl-	94.8*
24	1,3-Propanedione, 1,3-diphenyl-	-10
	Monosubstituted	
	Alcohols	
966	6-Dodecanone, 7-hydroxy-	36

** See also Inorganic Compounds
*** See also Quinones

TABLE II

Code No.	Classification and Name	Repellency Index
	KETONES**	
	Monosubstituted	
	Alcohols	
1771	1,3-Indandione, 2-isovaleryl-, copper(II) derivative	78
228	sodium derivative	87.7*
1774	2,4-Pentanedione, copper(II) derivative	100*
1107	dimethylthallium(III) derivative	33
2361	phenylmercury(II) derivative	86.3*
1777	1,3-Propanedione, 1,3-diphenyl-, copper(II) derivative	7
982	Valerophenone, β,γ,δ-trihydroxy-	35
	Amides	
1545	Acetoacetamide, N,N'-ethylenebis-	43
388, 1543	Acetoacetanilide	12, 6.1
1544	o-Acetoacetotoluidide	55
	Amines	
1505	Acetophenone, m-amino-	70
1749, 2444	Benzophenone, 4-amino-	62.4, 68
2594	Propiophenone, β-dimethylamino-	88.4*
	Ethers	
1003	Acetophenone, 4-methoxy-3-methyl-	63
611	1,6-Hexanedione, 1,6-bis(p-methoxyphenyl)-	4
1712	Propiophenone, p-ethoxy-	63
	Halides	
891	Acetophenone, p-bromo-	80
1828	Chalcone, 4'-bromo-	19
1827	-----, 4'-bromo-4-chloro-	-28
1829	-----, 4'-chloro-	-24
819	2,5-Cyclohexadien-1-one, hexachloro-	83
1830	Propiophenone, α-chloro-α,β-diphenyl-	-30
	Heterocyclic Compounds	
730	Acrylophenone, β-2-furyl-	56, 55.7
1907	Alloxan	-18
1108	monohydrate	24
713	3-Buten-2-one, 4-(2-furyl)-	80.7, 81
1821, 909	Dehydroacetic acid	74, 83.5
2192, 1803	Ketone, methyl 2-thienyl	100*, 88.8*
1008	-----, phenyl x-thienyl	91.2*
1805	-----, phenyl 2-thienyl	83
1804	1-Octadecanone, 1-(2-thienyl)-	-27
2295	1,4-Phthalazinedione, 2,3-dihydro-	38
288, 1231	2,4-Thiazolidinedione	45.1, 83.5
717	Uric acid	-68.1
716	Xanthone	85.6*
	Hydroxylamine Derivatives	
1879	2,3-Butanedione, 2-oxime	58
1731	Glyoxal, 1-phenyl-, 2-oxime	42.5
2371	2-oxime, sodium derivative	51

** See also Quinones

TABLE II

Code No.	Classification and Name	Repellency Index
	KETONES**	
	Monosubstituted	
	Nitriles	
1831	Acetoacetonitrile, α-phenyl-	29
1836	Butyronitrile, γ-benzoyl-α-(α-phenacylbenzyl)-α,β-diphenyl-	-21
1088	Ketiponitrile, α,δ-diphenyl-	-29
786	Pimelonitrile, γ-acetyl-γ-(2-cyanoethyl)-	9.5
	Nitro Compounds	
1409	Acetophenone, m-nitro-	48
1834	Butyrophenone, γ-nitro-β-phenyl-	3
370	Chalcone, 3-nitro-	25
2699	9-Fluorenone, 2,4,7-trinitro-	64.8
1833	Ketone, 2-nitro-3-phenylcyclopropyl phenyl	41
373	3-Pentadienone, 1,5-bis(m-nitrophenyl)-	-15.3, -15
	Miscellaneous	
1727	Acetophenone, 2,4-dihydroxy-	44
2439	Caprophenone, p-hydroxy-	61.2
1446	Hydantoin, 5-isobutyl-5-methyl-	36
1281	Pyrethrins and Toluene, α-[2-(2-butoxyethoxy)ethoxy]-4,5-methylenedioxy-2-propyl-	14
1226	Thiocyanic acid, acetonyl ester	100*
2427	ester with p-hydroxyacetophenone	98*
	Disubstituted	
	Acid-Ethers	
1694	Acetic acid, (p-acetylphenoxy)-	47
1695	-----, (p-benzoylphenoxy)-	-8
	Ester-Heterocyclic Compounds	
224	Chelidonic acid, dibutyl ester	65.4
1278	Piperonylcyclonene	11
1279	and Pyrethrins	-10
225	2H-Pyran-6-carboxylic acid, 3,3-dihydro-2,2-dimethyl-4-oxo-, butyl ester	58.1
	Halide-Nitro Compounds	
1843	Butyrophenone, α-bromo-γ-nitro-β-(p-nitrophenyl)-	-58
1844	-----, γ-bromo-γ-nitro-β-phenyl-	13
1845	-----, p-chloro-γ-nitro-β-phenyl-	53
2113	-----, p,α-dibromo-β-(p-chlorophenyl)-γ-nitro-γ-phenyl-	13
2114	-----, p,α-dibromo-γ-nitro-β,γ-diphenyl-	20
1842	Ketone, p-chlorophenyl 2-nitro-3-phenylcyclopropyl	18
	Miscellaneous	
1901	Acetanilide, o-chloro-	9
1802	Acetophenone, 4-hydroxy-3-methoxy-	34
399	Allantoin	-70.5
610	Barbituric acid, 5,5'-salicylidenedi-	-15
309	-----, 2-thio-	52
455	disodium derivative	69

** See also Quinones

TABLE II

Code No.	Classification and Name	Repellency Index
	KETONES**	
	Disubstituted	
	Miscellaneous	
1938	Benzophenone, 5,5'-dichloro-2,2'-dihydroxy-	21.5
1941	-----, 5,5'-dichloro-2,2'-dimethoxy-	-5
1937	-----, 3,3',5,5'-tetrachloro-2,2'-dihydroxy-	0
1094	2,5-Cyclohexadien-1-one, 2-(hydroxymercuri)-4-iso-nitro-6-nitro-, 2,4-anhydride	96*
2551	Furoin	40.3 (T)
2416	Glutarimide, β-[2-(3,5-dimethyl-2-oxocyclohexyl)-2-hydroxyethyl]-	100*
330	Hydantoin, 1-benzoyl-2-thio-	21.8
329	-----, 5-benzylidene-2-thio-	70.1
1445	-----, 1,3-dichloro-5,5-dimethyl-	83
1444	-----, 1,3-dichloro-5-isobutyl-5-methyl-	72
1841	Hydratroponitrile, β-(p-chlorobenzoyl)-	-48
2111	Hydrocinnamic acid, β-nitro-α-phenacyl-	62
1835	methyl ester	-28
229	1,3-Indandione, 2-(β-diethylaminopropionyl)-, potassium derivative	35.2
737	Indigo carmine	5.3
2489	Isatin, 5,7-dichloro-	86.3*
21	1,4-Phthalazinedione, 5-amino-2,3-dihydro-	-35
1832	Pyruvic acid, cyanophenyl-, ethyl ester	77
729	Resorufin	-34.5
404, 2665	Rhodanine	45.8, 87.1*
410	Saccharin	20.8
	Polysubstituted	
1846	Hydrocinnamic acid, α-(α-bromophenacyl)-β-nitro-	38.7
2555	4-Pyrone, 2-(chloromethyl)-5-hydroxy-	87.6*
1985	-----, 5-hydroxy-2-(hydroxymethyl)-	-94
1168	Uracil, 6-amino-2-thio-	-30
	LACTAMS	
1149	Brucine	81
1546	Carbostyril, 4-methyl-	58
2081	picrate	89.3*
2489	Isatin, 5,7-dichloro-	86.3*
1538	Nicotinonitrile, 4-(ethoxymethyl)-1,2-dihydro-6-methyl-2-oxo-	60
1536	2,5-Piperazinedione, 3,6-bis(guanylmercapto)-, dihydrochloride	56
	LACTONES	
	Unsubstituted	
2119, 896 1760	Coumarin	88*, 93*, 86*
784	Muconic acid, β,γ-dihydroxy-α,δ-diphenyl-, di-γ-lactone	-61

** See also Quinones

TABLE II

Code No.	Classification and Name	Repellency Index
	LACTONES	
	Substituted	
1654	Acetic acid, (1-hydroxyethoxy)phenyl-, lactone	29
967	-----, (1-hydroxyisopropoxy)phenyl-, lactone	35
1658	Benzoic acid, 5-chloro-2-(1-hydroxyethoxy)-, lactone	86*
1657	-----, o-(1-hydroxyethylmercapto)-, lactone	55
1111	1,2H-Benzopyran-3-carboxylic acid, 2-oxo-	97.1*
1865	Coumarin, 6-chloro-	85*
1821, 909	Dehydroacetic acid	74, 83.5
2135	Pilocarpine, monohydrochloride	50
1653	m-Toluic acid, 2-(1-hydroxyethoxy)-, lactone	67
2441	Vitamin C, ester with palmitic acid	-14
	LEAD COMPOUNDS**	
221	Acetic acid, mercapto-, lead(II) derivative, lead(II) salt	31
343	Benzoic acid, o-chloro-, lead(II) salt	-179
271	Carbamic acid, diisopropyldithio-, lead(II) salt	51
352	Naphthenic acid, lead(II) salt	34.6
	MANGANESE COMPOUNDS	
70	Carbamic acid, dimethyldithio-, manganese(II) salt	80
61	-----, ethylenebis[dithio-, manganese(II) salt	49.5
350	Naphthenic acid, manganese(II) salt	21.9
700	Nicotine, compound with 1/2 f. wt. manganese(II) p-nitrobenzoate	99*
696	compound with 1/2 f. wt. manganese(II) picrate	89.7*
	MERCAPTANS	
	See Thiols	
	MERCURY COMPOUNDS	
1646	Acetic acid, mercury(II) salt	89*
215	-----, mercapto-, mercury(II) derivative, barium salt	-109
2009	Acridine, compound with 1/2 f. wt. mercury(II) chloride, hydrochloride	100*
1640	Aniline, p-(acetoxymercuri)-	89*
134	Carbamic acid, diethyldithio-, mercury(II) salt	72
2086	Carbanilide, thio-, compound with 1 f. wt. mercury(II) chloride	43
2011	s-Collidine, compound with 1 f. wt. mercury(II) chloride, hydrochloride	94*
1094	2,5-Cyclohexadien-1-one, 2-(hydroxymercuri)-4-iso-nitro-6-nitro-, 2,4-anhydride	96*
2274	Dodecylamine, N-(chloromercuri)-	97.6*
2000	Ethylenediamine, N,N'-diphenyl-, compound with 1 f. wt. mercury(II) chloride	97*
2076	Hexamethylenetetramine, compound with 1 f. wt. mercury(II) chloride	87.5*
2006	2,6-Lutidine, compound with 1 f. wt. mercury(II) chloride, hydrochloride	96*
1990	Mercury, ethynylenebis[2-methoxyethyl-	90*

** See also Inorganic Compounds

TABLE II

Code No.	Classification and Name	Repellency Index
	MERCURY COMPOUNDS	
	Mercury compounds.	
2317	amyl ----- bromide	94*
2087	butyl ----- chloride	100*
2145	ethyl ----- bromide	89.9*
2178	heptyl ----- bromide	81.7
1868	hexyl ----- chloride	100*
2144	methyl ----- iodide	94.4*
1642	p-nitrophenyl ----- acetate	78.6
1636	phenyl ----- acetate	90*
1637	phenyl ----- acetate and Palmitamide	53
1994	phenyl ----- butyrate	100*
1633	phenyl ----- chloride	78
1639	phenyl ----- hydroxide	85*
1988	phenyl ----- propionate	80
1634	phenyl ----- thiocyanate	68
2179	propyl ----- chloride	100*
1641	p-tolyl ----- acetate	77.6
354	Naphthenic acid, mercury(II) salt	77.3
2078	Nicotine, compound with 1 f. wt. mercury(II) chloride	97.6*
2361	2,4-Pentanedione, phenylmercury(II) derivative	86.3*
788	Phenol, 2-(chloromercuri)-4,6-dinitro-	97.4*
2005	2-Picoline, compound with 3/2 f. wt. mercury(II) chloride	97.5*
2007	compound with 2 f. wt. mercury(II) chloride, hydrochloride	93.7*
2269	4-Picoline, compound with 2 f. wt. mercury(II) chloride	100*
2077	Piperidine, compound with 1 f. wt. mercury(II) chloride	100*
2004	Pyridine, compound with 1 f. wt. mercury(II) chloride	98*
2663	-----, 3-(chloromercuri)-	100*
2690	-----, 3-(hydroxymercuri)-, stearate	30.5
2003	Quinaldine, compound with 1 f. wt. mercury(II) chloride, hydrochloride	96*
1986	Sulfide, dodecyl phenylmercuri (mixture of tert-dodecyl isomers)	91*
	NICOTINE DERIVATIVES	
695	Nicotine (bentonite diluent)	98*
704	Nicotine, compound with 1/2 f. wt. cadmium p-nitrobenzoate	95.7*
703	compound with 1/3 f. wt. chromium(III) salicylate	86.3*
705	compound with 1 f. wt. cobalt(II) oxalate	97.9*
707	compound with 1/2 f. wt. cobalt(II) picrate	99*
706	compound with 1/2 f. wt. copper(II) dichromate	72.5
698	compound with 1/2 f. wt. copper(II) fumarate	100*
699	compound with 1 f. wt. copper(II) phthalate	92*
681	compound with 1/3 f. wt. iron(III) picrate	90*
700	compound with 1/2 f. wt. manganese(II) p-nitrobenzoate	99*
696	compound with 1/2 f. wt. manganese(II) picrate	89.7*
2078	compound with 1 f. wt. mercury(II) chloride	97.6*
2260	compound with 1 f. wt. 1,3,5-trinitrobenzene	100*
2079	picrate	96*
2429	salt with 4,6-dinitro-o-cresol	86*
	Nicotinium compounds.	
688	didodecyl ----- dipicrate	90*
691	didodecyl ----- dithiocyanate	86.7*
692	dimethyl ----- diiodide	70.7

TABLE II

Code No.	Classification and Name	Repellency Index
	NICOTINE DERIVATIVES	
1010	β-Nicotyrine	49
	Pyrrolidinium compounds.	
694	1-[2-(2-butoxyethoxy)ethyl]-1-methyl-2-(3-pyridyl) ----- p-toluenesulfonate	70
697	1-(2-chloroallyl)-1-methyl-2-(3-pyridyl) ----- p-toluenesulfonate	85.7*
	NITRILES	
	Unsubstituted	
28	Acetonitrile	-66
832	Arneel C (mixed aliphatic nitriles, C_8-C_{18}, chiefly lauronitrile)	51
210	Arneel S (mixed aliphatic nitriles, C_{16} and C_{18}, chiefly octadecadienenitrile and octadecenenitrile)	57.4
833	Arneel TO (octadecenenitrile, palmitonitrile and stearonitrile)	47
829	Caprinitrile	57
785	1,1,3-Indenetripropionitrile	78.6
830	Myristonitrile	76
2572	1-Naphthonitrile	95.1*
831	Palmitonitrile	35
767	1,3,5-Pentanetricarbonitrile, 3-phenyl-	84.3
	Monosubstituted	
	Acids	
416	Acetic acid, cyano-	40.3
1105	Cinnamic acid, α-cyano-	51
978	Cyclohexaneacetic acid, α-cyano-	46
	Amines	
1968	Acetonitrile, (p-aminophenyl)-, hydrochloride	89.5*
2479	Propionitrile, β-dihexylamino-	91.3*
	Guanidines	
1354	Guanidine, 1-butyl-3-cyano-	93.5*
477, 138	-----, cyano-	23, 48
1358	-----, 1-cyano-3-cyclohexyl-	70
1357	-----, 1-cyano-3-dodecyl-	76
471	-----, 1-cyano-3-isopropyl-	89.5*
1356	-----, 1-cyano-3-octadecyl-	42
1355	-----, 1,1-dibutyl-3-cyano-	89*
	Ketones	
1831	Acetoacetonitrile, α-phenyl-	29
1836	Butyronitrile, γ-benzoyl-α-(α-phenacylbenzyl)-α,β-diphenyl-	-21
1088	Ketiponitrile, α,δ-diphenyl-	-29
786	Pimelonitrile, γ-acetyl-γ-(2-cyanoethyl)-	9.5
	Nitro Compounds	
2598	Abietonitrile, dehydro-x,x-dinitro-	-122
201	Acetonitrile, (p-nitrophenyl)-	60
719	1,3,5-Pentanetricarbonitrile, 3-(p-nitrophenyl)-	-15.3
708	Pimelonitrile, γ-(2-cyanoethyl)-γ-nitro-	59

TABLE II

Code No.	Classification and Name	Repellency Index
	NITRILES	
	Monosubstituted	
	Miscellaneous	
961	Acetonitrile, (p-chlorophenyl)-	84
1484, 478	Benzamide, N-(cyanoguanyl)-	32, 37
963	Butyraldehyde, γ-cyano-α,α-diethyl-	62
2587	Glutarimide, α,γ-dicyano-β-methyl-β-p-tolyl-	5.5
403, 1098 2584	Glycinonitrile, N-methylene-	75.4, 88*, 69
2621	Propionitrile, β-isobornyloxy-	77
710	Sebaconitrile, δ,ε-dioxo-, dioxime	17.1
	Disubstituted	
1347	2-Furanacrylic acid, α-cyano-, ethyl ester	50
2497	Glycine, N,N-bis(2-cyanoethyl)-	10.3
2500	-----, N-(2-cyanoethyl)-	5
1841	Hydratroponitrile, β-(p-chlorobenzoyl)-	-48
1538	Nicotinonitrile, 4-(ethoxymethyl)-1,2-dihydro-6-methyl-2-oxo-	60
1832	Pyruvic acid, cyanophenyl-, ethyl ester	77
1482	s-Triazine-2-acetonitrile, 4,6-diamino-	42
	NITRO COMPOUNDS	
	Unsubstituted	
26, 1919	Benzene, (2-nitropropenyl)-	97.1*, 100*
1866, 2417	-----, 1,3,5-trinitro-	96*, 100*
1384	Ethane, nitro-	-15
1383	Methane, nitro-	-34
1412	Naphthalene, 1,5-dinitro-	-21
889	-----, 1-nitro-	83
1364	Propane, 1-nitro-	-56
1365	-----, 2-nitro-	-73
2582	Retene, compound with 1 f. wt. 1,3,5-trinitrobenzene	100*
2128	Stilbene, α-nitro-	58
1112, 2292	Toluene, 2,4-dinitro-	80.4, 67
2293	-----, o-nitro-	70
2294	-----, p-nitro-	71
	Monosubstituted	
	Acid Halides	
35	Benzoyl chloride, m-nitro-	-7.5
1537, 32	-----, p-nitro-	26, 66
	Acids	
2596	Abietic acid, dehydro-x,x-dinitro-	-143
721	Acetic acid, (2,4-dinitrophenyl)-	61
738	-----, (p-nitrophenyl)-	22
2291	Benzoic acid, 3,5-dinitro-	65.7
1413	Phthalic acid, 3-nitro-	41
1408	-----, 4-nitro-	51

TABLE II

Code No.	Classification and Name	Repellency Index
	NITRO COMPOUNDS	
	Monosubstituted	
	Alcohols	
1389	1-Butanol, 2-nitro-	79
401	1,3-Propanediol, 2-ethyl-2-nitro-	19
1380	-----, 2-(hydroxymethyl)-2-nitro-	-67
393	1-Propanol, 2-methyl-2-nitro-	-13
	Amides	
509	p-Acetotoluidide, x,x-dinitro-	68.5
1052	Benzamide, N-decyl-p-nitro-	78
360	-----, m-nitro-	68.3
339	-----, p-nitro-	82.2
	Amines	
791	Aniline, N,N-dimethyl-p-nitro-	75
259	-----, 2,4-dinitro-	77
255	-----, o-nitro-	66
1411	-----, p-nitro-	75
1221	p-Cresol, α-dimethylamino-, copper(II) derivative	89.6*
1328	Diphenylamine, o,o'-dinitro-	-10
1333	-----, 2,4-dinitro-	16
1895	-----, 2,2',4,4',6,6'-hexanitro-	8
1989	-----, 4-nitro-	27
1018, 1743	o-Toluidine, 5-nitro-	87.5*, 84
765	p-Toluidine, 3,5-dinitro-	83, 83.4
995	-----, 2-nitro-	42
2261	-----, 3-nitro-	58
	Arsenic Compounds	
8	Benzenearsonic acid, m-nitro-	12
1030	-----, o-nitro-	97*
	Ethers	
881, 1410	Anisole, 2,4-dinitro-	90*, 93*, 92.2*
261	-----, o-nitro-	67, 66.7
894	Phenetole, 2,4-dinitro-	89*
884	-----, p-nitro-	53
	Halides	
2487	Benzene, 1-bromo-2,4-dinitro-	88.4*
720, 901	-----, 1-chloro-2,4-dinitro-	95.8*, 91*
826	-----, 1-chloro-2-nitro-	89*
827	-----, 1-chloro-3-nitro-	81
578	-----, 1-chloro-4-nitro-	83.3
2488	-----, 1,2-dichloro-4-nitro-	97.4*
580	-----, 2,4-dichloro-1-nitro-	68.4 (T)
2573	-----, 1-iodo-3-nitro-	100*
1573	-----, pentachloronitro-	38
1385	Propane, 1-chloro-1-nitro-	-65
1386	-----, 2-chloro-2-nitro-	16
1387	-----, 1,1-dichloro-1-nitro-	12
1840	Toluene, α-bromo-p-nitro-	72
890	-----, 2-chloro-6-nitro-	78

TABLE II

Code No.	Classification and Name	Repellency Index
	NITRO COMPOUNDS	
	Monosubstituted	
	Heterocyclic Compounds	
15	Benzimidazole, 6-nitro-	87.5*
1527	Carbazole, 1,3,6,8-tetranitro-	-44
372	Dibenzofuran, 3-nitro-	-5
972	m-Dioxane, 5-ethyl-5-nitro-2-propenyl-	75.6
973	-----, 5-ethyl-5-nitro-2-propyl-	62
971	-----, 5-methyl-5-nitro-2-propenyl-	75
974	-----, 5-methyl-5-nitro-2-propyl-	41
1929	Pyridine, 3-(3-nitro-5-pyrazolyl)-	86.5*
1399	Pyrimidine, hexahydro-5-methyl-1,3-bis(1-methylheptyl)-5-nitro-	-16
2298	Quinoline, 5-methyl-8-nitro-	83.1
2299	-----, 6-methyl-8-nitro-	88.8*
2296	-----, 8-nitro-	77.3
	Hydrazines and Derivatives	
1861	Acetone, 2,4-dinitrophenylhydrazone	27
1722	Acetophenone, 2,4-dinitrophenylhydrazone	15
1858	2-Butanone, 2,4-dinitrophenylhydrazone	75
1931	Butyraldehyde, 2,4-dinitrophenylhydrazone	69.9
1721	Hydrazine, (2,4-dinitrophenyl)-	64.7
2070	-----, (p-nitrophenyl)-	77.8
	Ketones	
1409	Acetophenone, m-nitro-	48
1834	Butyrophenone, γ-nitro-β-phenyl-	3
370	Chalcone, 3-nitro-	25
2699	9-Fluorenone, 2,4,7-trinitro-	64.8
1833	Ketone, 2-nitro-3-phenylcyclopropyl phenyl	41
373	3-Pentadienone, 1,5-bis(m-nitrophenyl)-	-15, 15.3
	Nitriles	
2598	Abietonitrile, dehydro-x,x-dinitro-	-122
201	Acetonitrile, (p-nitrophenyl)-	60
719	1,3,5-Pentanetricarbonitrile, 3-(p-nitrophenyl)-	-15.3
708	Pimelonitrile, γ-(2-cyanoethyl)-γ-nitro-	59
	Phenols	
22, 779	o-Cresol, 3,5-dinitro-	96*, 60
530	copper(II) derivative	91.5* (T)
902	-----, 4,6-dinitro-, ammonium derivative	89*
822	Phenol, 2-sec-butyl-4,6-dinitro-	100* (T)
782	-----, 2-cyclohexyl-4,6-dinitro-	90*
2601	-----, p-(α,α-dimethyl-x-nitrobenzyl)-	-102
163, 23	-----, 2,4-dinitro-	89*, 80.3
1936	-----, 2,2'-methylenebis[4-nitro-	42.4
169	-----, m-nitro-	45, 45.4
162	-----, o-nitro-	28, 28.8
164	-----, p-nitro-	45.3, 45
456	copper(II) derivative	68.4, 68
1730	Resorcinol, 2,4-dinitro-	26
2289	Styphnic acid	68.3
776	Thymol, 2,6-dinitro-	98*

TABLE II

Code No.	Classification and Name	Repellency Index
	NITRO COMPOUNDS	
	Monosubstituted	
	Sulfides	
1093	Disulfide, bis(2,4-dinitrophenyl)	41
2141	-----, bis(p-nitrophenyl)	-92
	Thioacids	
566	Benzoic acid, m-nitrothiol-	30.5
565	-----, p-nitrothiol-	4
	Miscellaneous	
1884	Azoxybenzene, 4,4'-dinitro-	24
1515	Benzenesulfonamide, N,N'-p-phenylenebis[p-nitro-	-97
1923	Benzoic acid, p-nitro-, hydrazide	79.3
110	1-Butanesulfonic acid, 2-nitro-, ammonium salt	43.5
2233	Carbamic acid, dimethyl-, ester with 6-nitroeugenol	67.2
1967	-----, dimethyldithio-, 2,4-dinitrophenyl ester	76
2265	Guanidine, 1-amino-3-nitro-	48
	Mercury compound.	
1642	p-nitrophenyl ----- acetate	78.6
1367	Parathion	97.5*
122	Selenocyanic acid, p-nitrophenyl ester	81
709	Sulfoxide, bis(p-nitrophenyl)	-36
40, 1812	Thiocyanic acid, 2,4-dinitrophenyl ester	74, 66.6
1162	Urea, 1-allyl-3-(m-nitrophenyl)-2-thio-	92.1*
	Disubstituted	
	Acid-Halides	
2534	Benzoic acid, 2-bromo-3-nitro-	15.8
2535	ammonium salt	22
2536	-----, 2-bromo-5-nitro-	36.3
2537	ammonium salt	78.6
2538	-----, 4-bromo-3-nitro-	67.6
	Amide-Halides	
591	Benzanilide, 2'-chloro-4-nitro-	-110
624	-----, 3'-chloro-4-nitro-	-10
625	-----, 4'-chloro-4-nitro-	-143
	Amine-Halides	
369	Aniline, 2-bromo-4-nitro-	67.7
368	-----, 4-bromo-2-nitro-	59.4
415, 998	-----, 2-chloro-4-nitro-	67.8, 68, 67.6, 76
409	-----, 4-chloro-2-nitro-	34.3, 34
1748	-----, 2,6-dichloro-4-nitro-	76
371	p-Toluidine, N-(5-chloro-2,4-dinitrophenyl)-	-21.7
	Ether-Hetercyclic Compounds	
2300	Quinoline, 6-methoxy-5-nitro-	68.7
2301	-----, 6-methoxy-8-nitro-	72.7
	Halide-Ketones	
1843	Butyrophenone, α-bromo-γ-nitro-β-(p-nitrophenyl)-	-58
1844	-----, γ-bromo-γ-nitro-β-phenyl-	13
1845	-----, p-chloro-γ-nitro-β-phenyl-	53

TABLE II

Code No.	Classification and Name	Repellency Index
	NITRO COMPOUNDS	
	Disubstituted	
	Halide-Ketones	
2113	Butyrophenone, p,α-dibromo-β-(p-chlorophenyl)-γ-nitro-γ-phenyl-	13
2114	-----, p,α-dibromo-γ-nitro-β,γ-diphenyl-	20
1842	Ketone, p-chlorophenyl 2-nitro-3-phenylcyclopropyl	18
	Halide-Phenols	
49	Phenol, 2-chloro-4,6-dinitro-	72.2
167	-----, 4-chloro-2,6-dinitro-	74.2, 74
51	-----, 2-chloro-4-nitro-	35
176	-----, 2,6-dibromo-4-nitro-	84
2591	-----, p-(x,x-dichloro-α,α-dimethyl-x-nitrobenzyl)-	35
172	-----, 2,6-dichloro-4-nitro-	88*
	Halide-Sulfides	
2	Disulfide, bis(4-chloro-2-nitrophenyl)	30
1327	Sulfide, bis(4-chloro-2-nitrophenyl)	-40
718	-----, 2-chloroethyl o-nitrophenyl	73
1090	-----, 2-chloroethyl p-nitrophenyl	88.5*
	Miscellaneous	
2615	Acetic acid, chloro-, 2-nitroisobutyl ester	95.2*
1869	Acrylophenone, β-2-furyl-, 2,4-dinitrophenylhydrazone	1
2372	Benzenearsonic acid, 4-hydroxy-3-nitro-	100*
2373	Benzoic acid, 4-arsono-2-nitro-	82
1094	2,5-Cyclohexadien-1-one, 2-(hydroxymercuri)-4-iso-nitro-6-nitro-, 2,4-anhydride	96*
2611	Glycine, N,N-dibutyl-, 2-nitroisobutyl ester	45.5
2111	Hydrocinnamic acid, β-nitro-α-phenacyl-	62
1835	methyl ester	-28
2016, 1910	1-Naphthol, 4-(p-nitrophenylazo)-	-58, 30
186	Phenol, 2-amino-4-nitro-	46
788	-----, 2-(chloromercuri)-4,6-dinitro-	97.4*
1877	-----, p-(2,4-dinitroanilino)-	-20
2146	Picrolonic acid	73
2585	2-Propanol, 1,1,1-trichloro-3-nitro-	100*
690	Pyridinium compound. 3-(1-methyl-2-pyrrolidyl)-1-(p-nitrobenzyl) ----- chloride	95*
2490	Quinoline, 8-chloro-5-nitro-	96.1*
1762a	Sulfanilic acid, N-(2,4-dinitrophenyl)-	42
742	Sulfide, bis(2-chloro-4-nitrophenyl)	40
1486	s-Triazine, 2,4-diamino-6-(m-nitrophenyl)-	73
	Polysubstituted	
1846	Hydrocinnamic acid, α-(α-bromophenacyl)-β-nitro-	38.7
1477	Phenol, 2-(4,6-diamino-s-triazin-2-yl)-6-nitro-	-31.5
1900	Salicylic acid, 5-(p-nitrophenylazo)-	84
	NITROSOAMINES	
908	Aniline, N-methyl-N-nitroso-	97*, 96.8*
1325	Benzylamine, N-nitroso-N-phenyl-	89*
1277	Carbazole, 9-nitroso-	57

TABLE II

Code No.	Classification and Name	Repellency Index
	NITROSOAMINES	
2656,58,1405, 1764, 2333	Diphenylamine, N-nitroso-	52, 47, 74, 53.9, 89.9*
728	Hydroxylamine, N-1-naphthyl-N-nitroso-, ammonium derivative	89.5*
	NITROSO COMPOUNDS	
1152	Aniline, N,N-dimethyl-p-nitroso-	88*
1091	1-Naphthol, 2-nitroso-	67
391, 1092 997	2-Naphthol, 1-nitroso-	56, 82, 65, 87*
1966	Pyrazole, 1-(p-chlorophenyl)-3,5-dimethyl-4-nitroso-	100*
1996	-----, 3,5-dimethyl-4-nitroso-1-p-tolyl-	100*
	OSAZONES	
	See Hydrazine Derivatives	
	OXIMES	
	See Hydroxylamine Derivatives	
	OXONIUM COMPOUNDS	
1728	Gallocyanine	-13
2382	Rhodamine B Extra	83.4
2383	Rhodamine 6GDN	100*
	PHENOLS	
	Unsubstituted	
1974	2,3',4,5',6-Biphenylpentol	31
1236	m-(o and p)-Cresol	44.2
2684	o-Cresol, 6-allyl-	72.8
2357	p-Cresol, x,x-di-tert-butyl-	34.8
873	1-Naphthol	91*
847	2-Naphthol, x-methyl-	61.5
593	-----, x,x-methylenedi-	-51
1948	-----, 1,1'-methylenedi-	-10
2683	Phenol, o-allyl-	58.4
98	-----, o-amyl-	9
191	-----, p-tert-amyl-	41
931	-----, x-amyl-o-phenyl-	82
595	-----, p,p'-benzohydrylidenedi-	30
179	-----, o-cyclohexyl-	-30
99	-----, x,x-diamyl-	55
926	-----, x,x-diethyl-o-phenyl-	97*
2602	-----, p-(a,a-dimethylbenzyl)-	86.6*
594	-----, p,p'-ethylidenedi-	66.5
166, 2635	-----, p-isopropyl-	72.1, 62.9
936	-----, x-phenethyl-	81
868	-----, o-phenyl-	84
996	sodium derivative	67
999	-----, p-(1,1,3,3-tetramethylbutyl)-	91*

TABLE II

Code No.	Classification and Name	Repellency Index
	PHENOLS	
	Unsubstituted	
1987	Phloroglucinol, methyl-	41
941	Pyrocatechol	85*
599	Thymol, x,x'-benzylidenedi-	0
598	-----, x,x'-methylenedi-	-13
	Monosubstituted	
	Acids	
1496	Acetic acid, (o-hydroxyphenyl)phenyl-	42.5
392	2,3-Cresotic acid	70, 70.4
2099	β-Resorcylic acid	22
609	Salicylic acid, 3,3'-methylenedi-	48
	Amides	
183	Acetanilide, o-hydroxy-	-9, -9.6
184	-----, p-hydroxy-	-3, -3.5
185	-----, p-hydroxy-N-methyl-	-86, -86.3
1503	Benzamide, p-hydroxy-	42.5
629	2-Naphthamide, 3-hydroxy-N-2-naphthyl-	-28
626	2-Naphthanilide, 3-hydroxy-	24
	Amines	
1993	4,4'-Bi-o-cresol, 6,6'-diallyl-α,α'-bis(diethylamino)-, dihydrochloride	95*
1066	o-Cresol, 4-butyl-α-dimethylamino-	93.8*
1067	-----, α-dimethylamino-4-octyl-	88*
1065	p-Cresol, α-dimethylamino-	51
1180	acetate (salt)	58
1220	hydrochloride	74
1068	Mesitol, $\alpha^2,\alpha^4,\alpha^6$-tris(dimethylamino)-	79
781	1-Naphthol, 4-amino-	93*, 93.3*
778	-----, 5-amino-, hydrochloride	39, 38.6
42	Phenol, m-amino-	25.5
534	copper(II) derivative	78.4
41	-----, o-amino-	71.8
43	-----, p-amino-	-56
2443	-----, 4-amino-2-phenyl-	-7
2571	-----, p-anilino-	75.6
189	-----, p-(benzylamino)-	66, 7.5
168	-----, m-diethylamino-	40.5
2130	-----, p-dimethylamino-, monosulfate	46
768	2,5-Xylohydroquinone, α^2,α^5-bis(dimethylamino)-	91*
	Azo Compounds	
2266	m-Cresol, 4-phenylazo-	50
2309	o-Cresol, 4-phenylazo-	55.5
188	Phenol, p-phenylazo-	58, 58.3
2073	Resorcinol, 4-phenylazo-	68
789	3,5-Xylenol, 2,4-bis(phenylazo)-	82
1089	-----, 4-phenylazo-	90.9*
	Ethers	
2104	Eugenol	58
2682	Guaiacol, 6-allyl-	69.5

TABLE II

Code No.	Classification and Name	Repellency Index
	PHENOLS	
	Monosubstituted	
	Ethers	
2105	Isoeugenol	79.4
2685	Phenol, 2-allyl-4-methoxy-	80.1
2634, 102	-----, p-benzyloxy-	52, 63.4
	Halides	
1951	o,o'-Biphenol, 4,4'-dibromo-	50
1946	-----, 4,4',6,6'-tetrachloro-	98.3*
2638	Carvacrol, 5-chloro-	100*
871, 182	m-Cresol, 4-chloro-	-1, 71
597	-----, 5,5'-methylenebis[4-chloro-	37
820, 600	o-Cresol, tetrabromo-	48.3, 35
1824	Hydroquinone, bromo-	48
1823	-----, tetrabromo-	34
203	1-Naphthol, 2,4-dichloro-	88*
592	2-Naphthol, 6-bromo-	17
1933	-----, 1,1'-methylenebis[6-bromo-	-21
195	Phenol, o-bromo-	23
243	-----, p-bromo-	13
528	copper(II) derivative	81.3
194	-----, 2-bromo-4-phenyl-	57
531	copper(II) derivative	69.3
193, 867	-----, 4-tert-butyl-2-chloro-	49, 78
196	-----, m-chloro-	42
364	-----, p-chloro-	40
560	copper(II) derivative	63
2593	-----, p-(x-chloro-α,α-dimethylbenzyl)-	81.8
192	-----, 2-chloro-6-phenyl-	55
2453, 197	-----, 4-chloro-2-phenyl-	32, 90.9*
529	copper(II) derivative	7
174	-----, 2,4-dibromo-	59
558	copper(II) derivative	67
171	-----, 2,6-dibromo-	23.5
48	-----, 3,5-dibromo-2,4,6-trichloro-	89.3*
165	-----, 2,4-dichloro-	63.1
559	copper(II) derivative	55
2597	-----, p-(x,x-dichloro-α,α-dimethylbenzyl)-	71
170	-----, o-iodo-	4.6
1299	-----, 2,2'-methylenebis[4-chloro-	75
1950, 1572	-----, 2,2'-methylenebis[4,6-dichloro-	31, 89.3*
1934	-----, 4,4'-methylenebis[2,6-dichloro-	-25.3
1430	-----, 2,2'-methylenebis[3,4,6-trichloro-	95*
1935	-----, 3,3'-methylenebis[2,4,6-trichloro-	20
1943	-----, 4,4'-methylenebis[2,3,6-trichloro-	13.5
177	-----, pentabromo-	48.6
878, 780	-----, pentachloro-	84, 87*
596	-----, x,x,x,x-tetrabromo-4,4'-isopropylidenedi-	10.5
1945	-----, 2',4,6,6'-tetrabromo-2,4'-methylenedi-	76
912	-----, 2,3,4,5-tetrachloro-	85*
821, 178	-----, 2,4,6-tribromo-	37, 37.4
561	copper(II) derivative	44.4
180	-----, 2,4,6-trichloro-	0.7
453	copper(II) derivative	61
436	sodium derivative	40
1574	-----, 2,2'-(2,2,2-trichloroethylidene)bis[4,6-dichloro-	73.4

TABLE II

Code No.	Classification and Name	Repellency Index
	PHENOLS	
	Monosubstituted	
	Halides	
20	Phenol, 2,4,6-triiodo-	25
1947	-----, 4,4'-trimethylenebis[2,6-dibromo-	12.5
408	Thymol, 6-chloro-	71
990	-----, 6-chloro-2-octyl-	88*
993	3,5-Xylenol, 4-chloro-	68
	Hydroxylamine Derivatives	
1718	β-Resorcylaldehyde, oxime	-5
1908	Salicylaldehyde, oxime	63
	Ketones	
1727	Acetophenone, 2,4-dihydroxy-	44
2439	Caprophenone, p-hydroxy-	61.2
	Nitro Compounds	
779, 22	o-Cresol, 3,5-dinitro-	60, 96*
530	copper(II) derivative	91.5* (T)
902	-----, 4,6-dinitro-, ammonium derivative	89*
822	Phenol, 2-sec-butyl-4,6-dinitro-	100* (T)
782	-----, 2-cyclohexyl-4,6-dinitro-	90*
2601	-----, p-(α,α-dimethyl-x-nitrobenzyl)-	-102
23, 163	-----, 2,4-dinitro-	89*, 80.3
1936	-----, 2,2'-methylenebis[4-nitro-	42.4
169	-----, m-nitro-	45, 45.4
162	-----, o-nitro-	28, 28.8
164	-----, p-nitro-	45, 45.3
456	copper(II) derivative	68, 68.4
1730	Resorcinol, 2,4-dinitro-	26
2289	Styphnic acid	68.3
776	Thymol, 2,6-dinitro-	98*
	Nitroso Compounds	
1091	1-Naphthol, 2-nitroso-	67
1092, 391, 997	2-Naphthol, 1-nitroso-	87*, 65, 56, 82
	Sulfones	
2125	Phenol, o,p'-sulfonyldi-	66
587	-----, o,p'-(and p,p'-)-sulfonyldi-	52.7
2122	-----, p,p'-sulfonyldi-	41
	Sulfonic Acids	
1083	x,x-Biphenyldisulphonic acid, x,x-dibutyl-x-hydroxy-, sodium salt	41
244	1-Phenol-2-sulfonic acid, zinc salt	-4
	Thiosemicarbazones	
1770a	Benzaldehyde, p-hydroxy-, thiosemicarbazone	17.5
2088	Salicylaldehyde, 4-phenyl-3-thiosemicarbazone	0
1752	thiosemicarbazone	65
	Miscellaneous	
1852	Acetophenone, 2,4-dihydroxy-, semicarbazone	-82

TABLE II

Code No.	Classification and Name	Repellency Index
	PHENOLS	
	Monosubstituted	
	Miscellaneous	
	Ammonium compound.	
1110	diethyl(m-hydroxyphenyl)methyl ----- chloride	70
10, 2406	Benzenearsonic acid, p-hydroxy-	6, -35
7	monosodium salt	65.2
1962	2,5-Cresotaldehyde, phenylhydrazone	58
187	Phenol, p-benzylideneamino-	7.5
882	Salicylic acid, phenyl ester	75.8
	Sulfonium compound.	
1577	tris(p-hydroxyphenyl) ----- chloride	1
1652	s-Trithiane, 2,4,6-tris(p-hydroxyphenyl)-	36
	Disubstituted	
	Acid-Amines	
1346	Salicylic acid, 4-amino-	31
1693, 1697	-----, 5-amino-	11, 0
1323	hydrochloride	27
	Acid-Halides	
607	2-Naphthoic acid, 1-bromo-3-hydroxy-	76.7
1500	Propionic acid, β-(4-hydroxy-3,5-diiodophenyl)-α-phenyl-	50
	Aldehyde-Ethers	
899	Bourbonal (3-ethoxy-4-hydroxybenzaldehyde)	25
872	o-Vanillin	40
	Amide-Halides	
627	2-Naphthanilide, 2'-chloro-3-hydroxy-	-156
628	-----, 2',4'-dichloro-3-hydroxy-	-6
	Amine-Halides	
1942	o-Cresol, 6,6'-methylenebis[4-chloro-α-dimethylamino-	95*
173	Phenol, 4-amino-2,6-dibromo-	-134
1570	-----, 3-amino-2,4,5,6-tetrachloro-	73
	Amine-Heterocyclic Compounds	
1476	Phenol, o-(4,6-diamino-s-triazin-2-yl)-	34.3
1479	-----, o-[2-(4,6-diamino-s-triazin-2-yl)vinyl]-	69
	Amine-Ketones	
2377	Anthraquinone, 1-amino-4-hydroxy-	31
2379	-----, 1-hydroxy-4-(p-toluidino)-	-118
2378	Anthrarufin, 4,8-diamino-	-48
	Amine-Nitro Compounds	
186	Phenol, 2-amino-4-nitro-	46
1877	-----, p-(2,4-dinitroanilino)-	-20
	Amine-Sulfonic Acids	
1761a	1-Naphthol-3,6-disulfonic acid, 8-amino-	4
190	1-Phenol-4-sulfonic acid, 2-amino-	24
	Ether-Hydrazones	
1963	Acetophenone, 4-hydroxy-3-methoxy-, phenylhydrazone	43

TABLE II

Code No.	Classification and Name	Repellency Index
	PHENOLS	
	Disubstituted	
	Ether-Hydrazones	
1873	o-Vanillin, phenylhydrazone	83
	Halide-Imines	
620	o-Cresol, α-(m-chlorophenylimino)-	-28
619	-----, α-(o-chlorophenylimino)-	40
621	-----, α-(p-chlorophenylimino)-	73
623	-----, 4,6-α-(o-chlorophenylimino)-	-136
622	-----, α-(2,5-dichlorophenylimino)-	-16
	Halide-Ketones	
1938	Benzophenone, 5,5'-dichloro-2,2'-dihydroxy-	21.5
1937	-----, 3,3',5,5'-tetrachloro-2,2'-dihydroxy-	0
1329	Quinizarin, 2-chloro-	-30
	Halide-Nitro Compounds	
49	Phenol, 2-chloro-4,6-dinitro-	72.2
167	-----, 4-chloro-2,6-dinitro-	74, 74.2
51	-----, 2-chloro-4-nitro-	35
176	-----, 2,6-dibromo-4-nitro-	84
2591	-----, p-(x,x-dichloro-α,α-dimethyl-x-nitrobenzyl)-	35
172	-----, 2,6-dichloro-4-nitro-	88*
	Halide-Sulfides	
1939	Phenol, 2,2'-thiobis[4-bromo-	95.2*
1429, 1940	-----, 2,2'-thiobis[4-chloro-	82, 90.5*
1932	-----, 2,2'-thiobis[4,6-dichloro-	75.2
1952	-----, 2,2'-thiobis[3,4,6-trichloro-	95*
	Miscellaneous	
2136	Acetarsone	-17
1802	Acetophenone, 4-hydroxy-3-methoxy-	34
610	Barbituric acid, 5,5'-salicylidenedi-	-15
2372	Benzenearsonic acid, 4-hydroxy-3-nitro-	100*
1336	Creosol, α-amino-, hydrochloride	33
1944	o-Cresol, α,α'-oxybis[3,5-dichloro-	89*
1910, 2016	1-Naphthol, 4-(p-nitrophenylazo)-	30, -58
788	Phenol, 2-(chloromercuri)-4,6-dinitro-	97.4*
1949	-----, p,p'-sulfinylbis[3-chloro-	-3
1766a	Salicylaldehyde, 5-chloro-, thiosemicarbazone	12
1754	Vanillin, thiosemicarbazone	5.5
1871	o-Vanillin, semicarbazone	-103
	Polysubstituted	
2400	Aldarsone	-22
2401	Bismarsen	58
1855	Formamide, α-(2,6-dichloro-4-hydroxyphenylazo)-	25
1477	Phenol, 2-(4,6-diamino-s-triazin-2-yl)-6-nitro-	-31.5
1480	1-Phenol-2-sulfonic acid, 4-(4,6-diamino-s-triazin-2-yl)-	57
1900	Salicylic acid, 5-(p-nitrophenylazo)-	84

TABLE II

Code No.	Classification and Name	Repellency Index
	PHOSPHORUS COMPOUNDS**	
	Metaphosphates	
1128	Butyl metaphosphate(HPO_3)	-26
1129	Ethyl metaphosphate(HPO_3)	21
1127	Methyl metaphosphate(HPO_3)	22
	Phosphates, ortho-	
1218	Alkyl phosphate, mono(or di)- (alkyl = C_8-C_{18}, chiefly dodecyl)	-32.6
1203	Amyl phosphate, mono-	79
516	Butyl phosphate, di-	31
1202, 502 383	mono-	21, 1.5, 32.5
1186, 515	Ethyl phosphate, di-	18, 30
1204, 496	mono-	37, 5
517	mono-, disodium salt	-14
1205	Isopropyl phosphate, mono-	45
514	Methyl phosphate, di-	-7
1209, 500	mono-	16, 43
512	mono-, disodium salt	-56
495	Octyl phosphate, di-	54
503, 1206	mono-	56.4, 17
1214, 571	Phenyl phosphate, tri-	33.6, 43
382	Phosphoric acid, monobutyl mono(2-hydroxyethyl) ester	29.6
490	monoethyl monooctyl ester, sodium salt	48
1124	tris(2-butoxyethyl) ester	58
386, 1183	tris(2-chloroethyl) ester	60, 71
1213	tris(o-chlorophenyl) ester	61
1184, 1047	tris(2-ethylhexyl) ester	-11, 47
1185	tris(2-methylallyl) ester	79
1216	tris(2,4,6-trichlorophenyl) ester	61
2126	Phytic acid, hexacopper(II) salt	56
2123	hexazinc salt	-40
1207	Propyl phosphate, mono-	32
545	x-Tolyl phosphate, tri-	75.2
1182	p-Tolyl phosphate, tri-	67
	Phosphites	
1201	Butyl phosphite, di-	5
385	tri-	75
1208, 1199	Ethyl phosphite, tri-	47, 28
1198	Methyl phosphite, tri-	6
2607	Phosphorous acid, triester with hydroabietyl alcohol	-20
	Phosphonates	
1187	Acetic acid, phosphono-, triethyl ester	43
1217	Benzenephosphonic acid, p-chloro-	11
1211	diethyl ester	71
1215	-----, 3,4-dichloro-	43
1212	diethyl ester	83

** See also Inorganic Compounds

TABLE II

Code No.	Classification and Name	Repellency Index
	PHOSPHORUS COMPOUNDS**	
	Phosphonates	
380	Butanephosphonic acid, dibutyl ester	65
1191	Ethanephosphonic acid, bis(p-chlorophenyl) ester	78
379	Methanephosphonic acid, ethoxy-, diethyl ester	-8.6
1210	-----, trichloro-, diethyl ester	69
1190	2-Propene-1-phosphonic acid, dibutyl ester	74
1200	-----, 2-methyl-, dibutyl ester	76
1189	β-Styrenephosphonic acid, dibutyl ester	69
	Pyrophosphates	
497	Butyl pyrophosphate, di-	53
2319	sym-di-, diammonium salt	42.8
1197, 2323, 1136	tetra-	44, 90*, 88.8*
494	Ethyl pyrophosphate, di-	40
492	Methyl pyrophosphate, di-	25
1126	tetra-	4
501	Octyl pyrophosphate, di-	26
2318	tetra-	60
1196	Propyl pyrophosphate, tetra-	21
2321	Pyrophosphoric acid, bis(cyclic ester with 3-chloro-1,2-propanediol) and polymers	86.5*
2320	bis(cyclic ester with 1,2-propanediol) and polymers	-38
1130	tetrakis(2-butoxyethyl) ester	46
1120, 2325	tetrakis(2-chloroethyl) ester	63, 58.4
2322	x-Tolyl pyrophosphate, tetra-	81.8
	Tetraphosphates	
526	Butyl tetraphosphate, hexa-	44
2326, 205		
206, 1133	Ethyl tetraphosphate, hexa-	50, 71, 22, 74.3 (T)
505	tri-	44.6
1123, 524	Methyl tetraphosphate, hexa-	51.3, 12
499	tri-	25
2327	Octyl tetraphosphate, hexa-	30
525	Propyl tetraphosphate, hexa-	29
2328	Tetraphosphoric acid, bis(2-chloroethyl) ester	72.7
1137, 2324	hexakis(2-butoxyethyl) ester	57, 57.5
1121	hexakis(2-chloroethyl) ester	68
1195	hexakis(2-ethylhexyl) ester	45
	Thiophosphates	
1367	Parathion	97.5*
294	Phenyl thiophosphate[$(HO)_3P{:}S$], tri-	-57
1807	3-Thienyl thiophosphate[$(HS)_3P{:}O$], tri-	45
1800	3-Thienyl thiophosphate[$(HS)_3P{:}S$], tri-	-30
2604	Thiophosphoric acid[$(HO)_3P{:}S$], triester with 2-[(1-p-menthen-8-yl)oxy]ethanol	78
300	m-Tolyl thiophosphate[$(HO)_3P{:}S$], tri-	75

** See also Inorganic Compounds

TABLE II

Code No.	Classification and Name	Repellency Index
	PHOSPHORUS COMPOUNDS**	
	Thiophosphates	
289	o-Tolyl thiophosphate[$(HO)_3P:S$], tri-	-39
295	p-Tolyl thiophosphate[$(HO)_3P:S$], tri-	82
	Triphosphates	
1135	Butyl triphosphate, penta-	83
1132	Ethyl triphosphate, penta-	(T)
1125	Methyl triphosphate, penta-	8
1192	Triphosphoric acid, phenyl tetrapropyl ester	40
1193	tetrabutyl phenyl ester	28
	Miscellaneous	
1194	Benzenephosphonic acid, monoethyl ester, trianhydride with phosphoric acid	77
518	-----, thiono-, diphenyl ester	75
488	Benzenephosphonous acid	57
521	diphenyl ester	40
520	di-x-tolyl ester	59.3
1131	Butyl pyrophosphate, as-di-, dianhydride with diethyl phosphite	36
1122	Ethyl pyrophosphate, as-di-, dianhydride with diethyl phosphite	20
522	Phosphine, dichlorophenyl-	25.7
523	Phosphine oxide, dichlorophenyl-	38
1219	-----, tris(p-chlorophenyl)-	81.1
2517	Phosphine sulfide, dianilinophenyl-	17
519	-----, dichlorophenyl-	48
2359	Phosphinic acid, phenyl(trichloromethyl)-, ethyl ester	60
	Phosphonium compounds.	
2249	(2-chloroethyl)triethyl ----- iodide	86.6*
1432	(3,4-dichlorobenzyl)triphenyl ----- chloride	88*
483	Victamine D (octadecylammonium salt of N-octadecyl-amidophosphoric acid, alkyl ester)	59
	PSEUDOTHIOUREAS	
	See Thioureas	
	QUATERNARY NITROGEN COMPOUNDS	
	Ammonium Compounds	
	Ammonium compounds.	
462	alkadienyl(alkenyl and alkyl)trimethyl ----- chloride (C_{16} and C_{18}, chiefly $C_{18}H_{33}$ and $C_{18}H_{35}$)	51
111, 2167	alkylbenzyldimethyl ----- chloride (alkyl = C_8-C_{18}, chiefly C_{12})	63; 83
1033	alkylbenzyldimethyl ----- dibutyldithiocarbamate	84
1040	alkylbenzyldimethyl ----- dimethyldithiocarbamate	74
1459	alkyl(3,4-dichlorobenzyl)dimethyl ----- pentasulfide (alkyl = C_8-C_{18})	77.6

** See also Inorganic Compounds

TABLE II

Code No.	Classification and Name	Repellency Index
	QUATERNARY NITROGEN COMPOUNDS	
	Ammonium Compounds	
	Ammonium compounds.	
374	allylhexadecyldimethyl ----- chloride	73.4
460	alkyl(and alkenyl)trimethyl ----- chloride (alkyl = hexadecyl and octadecyl, alkenyl = octadecenyl)	36
2058	(x-alkyl-p-tolyl)trimethyl ----- chloride	91*
461	alkyltrimethyl ----- chloride (alkyl = C_8-C_{18}, chiefly C_{12})	47
1021	benzylbis(3-dimethylamino-2-hydroxypropyl)hexadecyl ----- chloride, bis(methochloride)	0
1037	benzyl[3-(p-cyclohexylphenoxy)-2-hydroxypropyl]bis (2-hydroxyethyl) ----- chloride	-21
1609, 112	benzyldimethyloctadecyl ----- chloride	71, 88*
1606	benzyldimethyl(octadecyloxymethyl) ----- chloride	92*
1617	benzyldimethylphenyl ----- 2-chloro-4,6-dinitrophenate	85*
1618	benzyldimethylphenyl ----- 4,6-dinitro-o-cresolate	79
1458	benzyldimethyl{2-[2-(x,1,1,3,3-tetramethylbutyl-p-toloxy)ethoxy]ethyl} ----- pentasulfide	84.3
1581	benzylethylmethyl[2-(pentachlorophenoxy)ethyl] ----- methyl sulfate	67.6
1022	benzylhexadecyldimethyl ----- 2-benzothiazolyl sulfide	88*
113	benzylhexadecyldimethyl ----- chloride	71.5
1661	benzyltributyl ----- chloride	73
249	benzyltriethyl ----- chloride	80
1366	benzyltrimethyl ----- chloride	59
2664	benzyltrimethyl ----- fluophosphate(HPF_6)	54.4
2229	bis(2-carboxyethyl)dimethyl ----- methyl sulfate	69.5
2239	bis(2-chloroethyl)ethylvinyl ----- chloride	74
18	(carboxymethyl)trimethyl ----- chloride, hydrazide	-275
2056	(p-chlorobenzyl)dimethyl{2-[2-(p-1,1,3,3-tetramethylbutylphenoxy) ethoxy]ethyl} ----- chloride	85*
2230	cyclohexyldiethylmethyl ----- methyl sulfate	89*
2148, 2358	dialkyldimethyl ----- chloride, (alkyl = C_8-C_{18}, primarily C_{12})	87.4*, 77
2256	dialkyldimethyl ----- chloride, (alkyl = C_{16}-C_{18})	58
1296	(x,x-dichlorobenzyl)dodecyldimethyl ----- chloride	-87
1110	diethyl(m-hydroxyphenyl)methyl ----- chloride	70
2516	diethyl(m-hydroxyphenyl)methyl ----- iodide, carbanilate	84.2
1608	dimethyl(2-phenoxyethyl){2-[2-(p-1,1,3,3-tetramethylbutylphenoxy)ethoxy]ethyl} ----- bromide	86*
2057	dimethyl(2-phenoxyethyl){2-[2-(p-1,1,3,3-tetramethylbutylphenoxy)ethoxy]ethyl} ----- chloride	71
2252	dodecyltrimethyl ----- chloride	90*
2165	ethyldimethyl(x-octadecenyl) ----- bromide	74
1460	ethyldimethyl(x-octadecenyl) ----- pentasulfide	77.9
45	ethyldimethyloctadecyl ----- bromide	78.8
46	ethylhexadecyldimethyl ----- bromide	84.4
843	ethyltrimethyl ----- iodide	93*
1024	hexadecyliminobis(2-hydroxytrimethylene)bis[trimethyl ----- chloride]	-1
44	hexadecyltrimethyl ----- bromide	85.2*
2254	hexadecyltrimethyl ----- chloride	90*
1714	(5-hydroxycarvacryl)trimethyl ----- iodide, dimethylcarbamate	83

TABLE II

Code No.	Classification and Name	Repellency Index
	QUATERNARY NITROGEN COMPOUNDS	
	Ammonium Compounds	
	Ammonium compounds.	
1716	(4-hydroxy-o-cumyl)trimethyl ----- iodide, dimethylcarbamate	61
2671	(x-kerylbenzyl)trimethyl ----- chloride	86.9*
2242	(p-mercaptophenyl)trimethyl ----- iodide, methylthiolcarbamate	77.7
2241	(5-mercapto-o-tolyl)trimethyl ----- iodide, methylthiolcarbamate	91.9*
2660	tetraethyl ----- fluophosphate(HPF_6)	62.3
361	tetraethyl ----- iodide	52
2225	triamylmethyl ----- methyl sulfate	100*
2223	tribenzylmethyl ----- methyl sulfate	67.6
1660	tributyl(o-chlorobenzyl) ----- chloride	80
1585	tributylmethyl ----- iodide	93*
2218	tributylmethyl ----- methyl sulfate	67
1604	trimethyl(2-naphthenyloxyethyl) ----- chloride, naphthenyl = primarily monocyclic saturated hydrocarbon radicals)	77
209	trimethyloctadecadienyl(and octadecenyl) ----- chloride	80.7
1612, 2255	trimethyloctadecyl ----- chloride	90*, 73
1605	trimethyloctadecyl ----- pentachlorophenate	93.1*
303	trimethylphenyl ----- iodide	78
2253	trimethyltetradecyl ----- chloride	88*
2235	tris(2-chloroethyl)ethyl ----- chloride	88.6*
2409, 413	Betaine, hydrochloride	4, 27
1607	Phemerol	98*
674	Roccal	16
	Piperidinium and Pyridinium Compounds	
	Nicotinium compounds.	
688	didodecyl ----- dipicrate	90*
691	didodecyl ----- dithiocyanate	86.7*
692	dimethyl ----- diiodide	70.7
	2-Picolinium compounds.	
2208	1-ethyl ----- bromide	20
693, 437	1-methyl ----- iodide	53, 74
	3-Picolinium compounds.	
2209	1-butyl ----- chloride	71
2212	1-decyl ----- chloride	78
2213	1-dodecyl ----- chloride	73
2207	1-ethyl ----- bromide	43.5
2210	1-hexyl ----- chloride	81
2197	1-methyl ----- methyl sulfate	45
2211	1-octyl ----- chloride	97*
	Pyridinium compounds.	
2150	1-(x-alkyl-x-naphthylmethyl) ----- chloride, (alkyl = chiefly C_9) (Emcol 888)	56.7
1311, 2410	1-allyl ----- bromide	36, 57
439	2-amino-1-methyl ----- iodide	65
686	1-benzyl-3-(1-methyl-2-pyrrolidyl) ----- chloride	82.8
2590	(1-carboxymethyl) ----- chloride, ester with hydroabietyl alcohol	65.4
2592	1-(carboxymethyl) ----- chloride, isobornyl ester	88.7*
2491	1-(2-hydroxyethyl) ----- 2-benzothiazolyl sulfide	62.3

TABLE II

Code No.	Classification and Name	Repellency Index
	QUATERNARY NITROGEN COMPOUNDS	
	Piperidinium and Pyridinium Compounds	
	Pyridinium compounds.	
1290	3-bromo-1-dodecyl ----- bromide	81
682	1-butyl-3-(1-methyl-2-pyrrolidyl) ----- iodide	56
454	1-cyclohexyl ----- bromide	48.5, 48
451	1-decyl ----- bromide	76, 75.7
535	1-decyl ----- chloride	81.5
680	1-(2,4-dichlorobenzyl)-3-(1-methyl-2-pyrrolidyl) ----- chloride	89*
447	1-dodecyl ----- bromide	96*, 96.2*
286	1-dodecyl ----- chloride	81.8, 82
2492	1-dodecyl ----- 5-chloro-2-benzothiazolyl sulfide	88.1*
701	1-dodecyl-2-hexyl ----- p-toluenesulfonate	94.5*
679	1-dodecyl-3-(1-methyl-2-pyrrolidyl) ----- bromide	82.4
537	1-dodecyl-3-(1-methyl-2-pyrrolidyl) ----- chloride	75.3
444	1-hexadecyl ----- bromide	83, 83.2
538	1-hexadecyl ----- chloride	82.6
449	1-hexyl ----- bromide	77, 76.8
2491	1-(2-hydroxyethyl) ----- 2-benzothiazolyl sulfide	62.3
2151	1-(2-hydroxyethylcarbamylmethyl) ----- chloride, myristate	-24
438, 689	1-methyl ----- iodide	33.5, 84.5
2198	1-methyl ----- methyl sulfate	-2
687	1-methyl-3-(1-methyl-2-pyrrolidyl) ----- methyl sulfate	96*
690	3-(1-methyl-2-pyrrolidyl)-1-(p-nitrobenzyl- ----- chloride	95*
678	3-(1-methyl-2-pyrrolidyl)-1-octadecyl ----- iodide	84.7
536	1-octadecyl ----- chloride	79.8
450	1-octyl ----- bromide	89*, 88.7*
445	1-phenethyl ----- bromide	65
446	1-tetradecyl ----- bromide	87, 86.9*
2199	1,2,4,6-tetramethyl ----- methyl sulfate	64
2220	1,2,4-trimethyl ----- methyl sulfate	52
683	1,2,6-trimethyl ----- iodide	80.3
2221	1,2,6-trimethyl ----- methyl sulfate	72.7
452	1-(triphenylmethyl) ----- bromide	68.3
	Other Heterocyclic Compounds	
2023	Hexamethylenetetramine, allyl iodide	75
	Isoquinolinium compounds.	
1293, 1724	2-dodecyl ----- bromide	90*, 77
1455	2-dodecyl ----- chloride	92*, 93*
1292	2-dodecyl ----- 2,4-dichlorophenate	1
1461	2-dodecyl ----- pentasulfide	65
2166	2-dodecyl ----- thiocyanate	76
685, 1442	2-methyl ----- iodide	88.8*
2200	2-methyl ----- methyl sulfate	77
	Lepidinium compound.	
2195	1-methyl ----- methyl sulfate	75.6
	Morpholinium compounds.	
2226	4,4-dimethyl ----- methyl sulfate	62
2227	4-ethyl-4-methyl ----- methyl sulfate	33.5
2228	4-methyl-4-phenyl ----- methyl sulfate	44.5
2075, 1926	Phenosafranine	90*, 88.5*
	Pyrrolidinium compounds.	
694	1-[2-(2-butoxyethoxy)ethyl-1-methyl-2-(3-pyridyl) ----- p-toluenesulfonate	70

TABLE II

Code No.	Classification and Name	Repellency Index
	QUATERNARY NITROGEN COMPOUNDS	
	Other Heterocyclic Compounds	
	Pyrrolidinium compounds.	
697	1-(2-chloroallyl)-1-methyl-2-(3-pyridyl) ----- p-toluenesulfonate	85.7*
1036	1-hexadecyl-1,2,5-trimethyl ----- chloride	23
1020	1-hexadecyl-1,2,5-trimethyl ----- iodide	90.8*
	Quinaldinium compounds.	
2386	1-allyl ----- bromide	81
2205	1-decyl ----- chloride	82
2204	1-dodecyl ----- chloride	61
1920	1-ethyl ----- iodide	76.5
2206	1-isoamyl ----- iodide	73
2201	1-methyl ----- methyl sulfate	61
2203	1-octyl ----- chloride	56
	Quinolinium compounds.	
1595	1-allyl-2,7-dimethyl ----- bromide	62.5
1629	1-dodecyl-2,7-dimethyl ----- chloride	70
1928	1-ethyl ----- iodide	92.2*, 92.5*
2171	1-isoamyl ----- iodide	68
1453, 2385 684	1-methyl ----- iodide	82.7, 86*, 84
2202	1-methyl ----- methyl sulfate	76
2196	1-octyl ----- chloride	84.3
1371	1,2,7-trimethyl ----- iodide	79
2219	1,2,7-trimethyl ----- methyl sulfate	55
	Quinoxalinium compound.	
2224	1,2,3-trimethyl ----- methyl sulfate	76
	QUINONES	
2231	Anthraquinone, 1-amino-	-72
1898	-----, 2-amino-	61
2397	-----, 1-amino-5-chloro-	-72
2398	-----, 1-amino-6-chloro-	-13
2399	-----, 1-amino-8-chloro-	-8
2395	-----, 1-amino-2,4-dibromo-	-23
2396	-----, 2-amino-1,3-dibromo-	-88
2377	-----, 1-amino-4-hydroxy-	31
869	-----, 2-chloro-	-4
2379	-----, 1-hydroxy-4-(p-toluidino)-	-118
2287	2,6-Anthraquinonedisulfonic acid	23
2378	Anthrarufin, 4,8-diamino-	-48
581	Diphenoquinone, octachloro-	(T)
2121, 1984	1,4-Naphthoquinone, 2,3-dichloro-	55, 54
1971	Phenanthrenequinone	83
1329	Quinizarin, 2-chloro-	-30
732	p-Quinone, 2,6-dichloro-	81.6
735	-----, 2,5-dichloro-3,6-dihydroxy-	-14, -14.5
85	m-Terphenyl-3,4,3",4"-tetrone, decachloro-	-119
	RESINS	
	See Unknown Structures	

TABLE II

Code No.	Classification and Name	Repellency Index
	SELENIUM COMPOUNDS**	
3	Acetic acid, selenocyano-, potassium salt	53
93	Carbamic acid, diethyldithio-, selenium(II) salt	-21
270	-----, diisopropyldithio-, selenium(II) salt	-35
114	-----, dimethyldithio-, selenium(II) salt	(waste)
	Phenazoselenonium compound.	
1106	10,10a-dihydro-3-(1-naphthylamino) ----- chloride	44
124	Selenocyanic acid, benzyl ester	90*
1104	ester with α-hydroxyacetanilide	97.8*
125	methyl ester	73
123	2-naphthyl ester	65
122	p-nitrophenyl ester	81
126	phenyl ester	97*
130	Urea, seleno-	17
	SEMICARBAZIDES	
47	Semicarbazide, hydrochloride	82.8
204, 291	-----, 1-phenyl-	44.1, 32.8
	SEMICARBAZONES	
	Unsubstituted	
327	Acetone, semicarbazone	85.9*
1723	Acetophenone, semicarbazone	75.6
1772	Benzaldehyde, semicarbazone	67
1849	Benzophenone, semicarbazone	66
1775	2-Butanone, semicarbazone	46
1773	3-Buten-2-one, 4-phenyl-, semicarbazone	86*
1779	Butyrophenone, semicarbazone	-15
1854	Chalcone, semicarbazone	73
1872	Cinnamaldehyde, semicarbazone	6
1768	Cyclohexanone, semicarbazone	92*
2010	-----, 2-cyclohexylidene-, semicarbazone	86*
1857	1-Indanone, semicarbazone	40
1853	Ketone, cyclohexyl phenyl, semicarbazone	68
1856	p-Quinone, disemicarbazone	-16
	Substituted	
1954	Acetophenone, 4-methoxy-3-methyl-, semicarbazone	74
1852	-----, 2,4-dihydroxy-, semicarbazone	-82
1848	Benzaldehyde, o-ethoxy-, semicarbazone	-2
1959	-----, p-propoxy-, semicarbazone	12
1810	Ketone, 5-chloro-2-thienyl methyl, semicarbazone	69
1850	Piperonal, semicarbazone	-97
1871	o-Vanillin, semicarbazone	-103
1847	o-Veratraldehyde, semicarbazone	28
	SILVER COMPOUNDS	
2494	Succinic acid, alkenyl(C_6-C_8)-, amminesilver complex	-18.5
2360	disilver salt	86*

** See also Inorganic Compounds

TABLE II

Code No.	Classification and Name	Repellency Index
	SULFATES	
2666	Sulfuric acid, mono(2-aminoethyl) ester	65.5
	SULFENAMIDES	
260	2-Benzothiazolesulfenamide, N-cyclohexyl-	70
1982	Hydrosulfamine, S-(methylphenylthiocarbamyl)-	84
	SULFIDES	
	Monosulfides	
2630	Acetic acid, (tert-butylmercapto)-, ester with hydroabietyl alcohol	46.7
2620	-----, chloro-, ester with 2-isobornylmercaptoethanol	89.9*
2527	-----, (decylmercapto)-	-38
2411	-----, (4,6-diamino-s-triazin-2-ylmercapto)-, sodium salt	2
741	-----, thiodi-	4.8
2603	ester with hydroabietyl alcohol	15.4
740	Aniline, p,p'-thiobis[N,N-dimethyl-	59
2127	Benzoic acid, o-(1-carboxyethylmercapto)-	-2
2124	-----, o-(carboxymethylmercapto)-	46
1571	Benzyl sulfide	66.3
2528	Butyric acid, γ-(octylmercapto)-	13.7
73	Decyl sulfide	2
959	Ethanol, 2,2'-thiodi-, diacetate	34
2669	Morpholine, 4,4'-thiodimethylenedi-	74.3
71, 1820	Octadecyl sulfide	-19, -38
1939	Phenol, 2,2'-thiobis[4-bromo-	95.2*
1940, 1429	-----, 2,2'-thiobis[4-chloro-	82, 90.5*
1932	-----, 2,2'-thiobis[4,6-dichloro-	75.2
1952	-----, 2,2'-thiobis[3,4,6-trichloro-	95*
742	Sulfide, bis(2-chloro-4-nitrophenyl)	40
1327	-----, bis(4-chloro-2-nitrophenyl)	-40
2547, 739	-----, bis(p-chlorophenyl)	82, -49
718	-----, 2-chloroethyl o-nitrophenyl	73
1090	-----, 2-chloroethyl p-nitrophenyl	88.5*
2622	-----, dodecyl isobornyl	-57
1819	Tetradecyl sulfide	-36
861	1,2,4-Thiadiazole, 3,5-bis(carbethoxymethylmercapto)-	27
865	-----, 3,5-bis(dodecylmercapto)-	-67
1353	-----, 3,5-bis(methylmercapto)-	91*
856	2-Thiazoline, 2-allylmercapto-	95*
854	-----, 2-[2-(2-butoxyethoxy)ethylmercapto]-	76
855	-----, 2-[2-(2-chloroethoxy)ethylmercapto]-	86*
853	-----, 2-(2-methylallylmercapto)-	95*
2187, 1702	-----, 5-methyl-2-[1-(2-methylallyl)-2-imidazolin-2-ylmethylmercapto]-	92*, 75
862	-----, 2-(2-phenoxyethylmercapto)-	34
857	-----, 2-(2,4,6-trichlorobenzylmercapto)-	84
1799	Thiophene, 3-(allylmercapto)-	84
1798, 2189	-----, 3-(benzylmercapto)-	86.6*, 100*
1797	-----, 3-(isopropylmercapto)-	80

TABLE II

Code No.	Classification and Name	Repellency Index
	SULFIDES	
	Disulfides	
1513	Acetanilide, p,p'-dithiobis-	-37
743	Aniline, p,p'-dithiobis[N,N-dimethyl-	67
1511	-----, o,o'-dithiodi-	77.8
1978	-----, p,p'-dithiodi-, dihydrochloride	95*
1656, 757	Benzoic acid, o,o'-dithiodi-	71.6, -48
252, 1332	Benzothiazole, 2,2'-dithiobis-	16, 25
77	Decyl disulfide	-13
2633	Disulfide, bis(2-chloroisopropyl)	100*
2	-----, bis(4-chloro-2-nitrophenyl)	30
1093	-----, bis(2,4-dinitrophenyl)	41
2141	-----, bis(p-nitrophenyl)	-92
859	Formic acid, dithiobis[thiono-, diethyl ester	96*
103, 2637	diisopropyl ester	93.1*, 60.9
78	Octadecyl disulfide	-144
2548	Octyl disulfide	36
72	Tetradecyl disulfide	8.6
101	Thiazole, 2,2'-dithiobis[4,5-dimethyl- and 2,2'-dithiobis[4-ethyl-	75.4
	SULFINATES	
2400	Aldarsone	-22
	SULFONAMIDES	
	Unsubstituted	
279	Benzenesulfonamide	-8
269	-----, N-butyl-	73
267	-----, N,N-dibutyl-	80
280	-----, N,N-diethyl-	60
278	-----, N-ethyl-	1
268	-----, N-isopropyl-	76
508, 642	o(and p)-Toluenesulfonamide	49, 63
670	-----, N-ethyl-	43
650	p-Toluenesulfonamide	29
	Substituted	
1472	Acetanilide, p-(guanylsulfamyl)-	-94
2140	-----, p,p'-[p-phenylenebis(iminosulfonyl)]bis-	-95
2540	Benzenearsonic acid, p-(p-sulfamylphenylsulfamyl)-	6
1431	Benzenesulfonamide, 3,4-dichloro-N-methyl-	97.8*
1514	-----, p,p'-(ethylenedioxy)bis[N,N-dibutyl-	-77
726	-----, N-hydroxy-	65.5
1515	-----, N,N'-p-phenylenebis[p-nitro-	-97
2428	-----, 2,3,4,5-tetrachloro-N-methyl-	76
1683	Chloramine-B, sesquihydrate	89*
506	Dibenzenesulfonamide, N-butyl-	53.3
1684	Dichloramine-B	87*
2142	Isothiocyanic acid, ester with N-(2-pyrimidyl)-1-phenol-4-sulfonamide	-59
410	Saccharin	20.8
1471	Sulfaguanidine	-61
1542	Sulfanilamide, N^1-2-quinoxalyl-	-40
2143	p-Toluenesulfonamide, α-amino-, hydrochloride	-15

TABLE II

Code No.	Classification and Name	Repellency Index
	SULFONES	
	Unsubstituted	
2558	Benzyl sulfone	-97
934	Butyl sulfone	74
2244	tert-Butyl sulfone	53
774	Ethane, 1,2-bis(isopropylsulfonyl)-	16.2
2589	Isobornyl sulfone	89.1*
586, 273	Phenyl sulfone	72, 46.5
925	Propyl sulfone	47
2525	Sulfone, benzyl butyl	80.7
2250, 1099	-----, benzyl decyl	-17, 70
824, 2246	-----, benzyl phenyl	48, -13
2524	-----, benzyl p-tolyl	-24
825	-----, butyl dodecyl	-16
1100, 2245	-----, phenyl p-tolyl-	72.6, 50
239	Thiophene, tetrahydro-, 1,1-dioxide	52.1
237	-----, tetrahydro-2,4-dimethyl-, 1,1-dioxide	70
	Substituted	
2523	Lauric acid, diester with 2,2'-sulfonyldiethanol	-36
2125	Phenol, o,p'-sulfonyldi-	66
587	-----, o,p'-(and p,p')-sulfonyldi-	52.7
2122	-----, p,p'-sulfonyldi-	41
2238	Sulfone, bis(2-chloroethyl)	100*
2247	-----, bis(2-dichloroarsinoethyl)	84.1
2532	-----, bis(2,4-dichlorobenzyl)	-58
1080, 992 1363, 2264	-----, chloromethyl p-chlorophenyl	58, 80, 69, 77
	SULFONIC ACIDS	
	Unsubstituted	
808, 809	Alkanesulfonic acid, copper(II) salt	71.7, 73
783	sodium salt	-81
754, 755, 756	Benzenesulfonic acid, x-octyl-, sodium salt (mixed octyl)	25, 45, 52
1084	x-Biphenylsulfonic acid, x-butyl-, sodium salt	31
74	1-Octanesulfonic acid	23
2364	2-Propene-1-sulfonic acid, 2-methyl-, sodium salt	-5
736	p-Toluenesulfonic acid, sodium salt	30
507	x,x-Xylenesulfonic acid, sodium salt	55
	Substituted	
2287	2,6-Anthraquinonedisulfonic acid	23
367, 790	Benzenediazosulfonic acid, p-dimethylamino-, sodium salt	78.2, (T)
1710	Benzenesulfonic acid, p-chloro-	-10
1709	ammonium salt	-1
2639	Benzoic acid, m-sulfo-	34.4
818	dodecyl ester, salt with 1 f. wt. 2,2',2''-nitrilotriethanol	44
1911	Benzopurpurin 4B	-20

TABLE II

Code No.	Classification and Name	Repellency Index
	SULFONIC ACIDS	
	Substituted	
1083	x,x-Biphenyldisulfonic acid, x,x-dibutyl-x-hydroxy-, sodium salt	41
2401	Bismarsen	58
110	1-Butanesulfonic acid, 2-nitro-, ammonium salt	43.5
737	Indigo carmine	5.3
1761a	1-Naphthol-3,6-disulfonic acid, 8-amino-	4
244	1-Phenol-2-sulfonic acid, zinc salt	-4
1480	-----, 4-(4,6-diamino-s-triazin-2-yl)-	57
190	1-Phenol-4-sulfonic acid, 2-amino-	24
1027	3-Pyridinesulfonic acid	27
1342	5-Quinolinesulfonic acid, 8-hydroxy-	73
1682	-----, 8-hydroxy-7-iodo-	61
1340	8-Quinolinesulfonic acid	19
2407	Stearic acid, x-(2,4-diisopropyl-5-sulfophenyl)-, disodium salt	-49
2367	-----, x-(4-ethyl-3-sulfophenyl)-, disodium salt	60
2370	-----, x-(5-sulfocarvacryl)-, disodium salt	38.5
2369	-----, x-(3-sulfo-p-phenethyl)-, disodium salt	29
2366	-----, x-(3-sulfo-p-tolyl)-, disodium salt	27
2368	-----, x-(5-sulfo-2,4-xylyl)-, disodium salt	-14
1762a	Sulfanilic acid, N-(2,4-dinitrophenyl)-	42
2159	-----, N-guanyl-	-66
2074	Tartrazine O	43
2363	2-Thiophenesulfonic acid, sodium salt	20.5
2365	-----, 5-tert-butyl-, sodium salt	41
2394	o-Toluenesulfonic acid, 5-dimethylamino-, potassium salt	-9
579	p-Toluenesulfonic acid, 2-chloro-, sodium salt	42
1481	s-Triazine-2-ethanesulfonic acid, 4,6-diamino-	7
	SULFONIC ACID ESTERS	
	Unsubstituted	
276	Benzenesulfonic acid, diester with 1,2-propanediol	38
1686	ethyl ester	83
1687	methyl ester	77
2562	p-Toluenesulfonic acid, diester with ethylene glycol	6.5
2686	dodecyl ester	-85
2563	hexadecyl ester	-65
2565	methyl ester	89.8*
2564	octadecyl ester	-235
549	o-tolyl ester	42
2559	p-tolyl ester	43
	Substituted	
2560	p-Toluenesulfonic acid, diester with diethylene glycol	-44
2557	pentachlorophenyl ester	-35
	SULFONIUM COMPOUNDS	
	Sulfonium compounds.	
1295	dodecyldimethyl ----- methyl sulfate	77
1297	dodecyl(2-hydroxyethyl)methyl ----- methyl sulfate	93.7*
2362	tris(2-hydroxyethyl) -----chloride	-4
1577	tris(p-hydroxyphenyl) ----- chloride	1

TABLE II

Code No.	Classification and Name	Repellency Index
	SULFONYL HALIDES	
850	2-Naphthalenesulfonyl chloride	-12
	SULFOXIDES	
1575	Benzyl sulfoxide	65.4
1949	Phenol, p,p'-sulfinylbis[3-chloro-	-3
709	Sulfoxide, bis(p-nitrophenyl)	-36
	THIOACIDS	
	See Thiocarboxylates	
	THIOAMIDES	
292, 480	Acetamide, thio-	93.7*, (T)
2425	Acetanilide, thio-	73
1013	Hendecanamide, thio-	12
	THIOCARBAMATES	
	Unsubstituted	
1085	Benzothiazole, 2-mercapto-7-phenyl-	23
863	2(3H)-Benzothiazolethione, 3-methyl-	58
17	2-Benzoxazolethiol	56
132	Carbamic acid, dibutyldithio-, copper(II) salt	-77
82	zinc salt	-36
92	-----, diethyldithio-, copper(II) salt	-104
68	iron(III) salt	11
134	mercury(II) salt	72
322	salt with diethylamine	33.8
298	sodium salt	32.8
63	zinc salt	-22
64	-----, diisopropyldithio-, iron(III) salt	-10
271	lead(II) salt	51
272, 65	zinc salt	-49.5, 20
70	-----, dimethyldithio-, manganese(II) salt	80
323	salt with dimethylamine	90*
198	sodium salt	99*
81	zinc salt	80
62	-----, ethylenebis[dithio-, iron(III) salt	22
61	manganese(II) salt	49.5
60	zinc salt	38
2667	-----, ethylthiono-, ethyl ester	85.5*
69	-----, hexamethylenebis[dithio-, zinc salt	-52
2139	-----, thiono-, ethyl ester	84
2668	Carbanilic acid, thiono-, ethyl ester	92.5*
402, 254	1-Piperidinecarbodithioic acid, piperidine salt	80, 83.7
2659	1,3,6H-Thiazine-2-thiol, 4,6,6-trimethyl-	95.6*
106, 2631	2-Thiazolethiol, 4,5-dimethyl- and 4-ethyl-	88.3*, 68
12	-----, 4-phenyl-	64.3
856	2-Thiazoline, 2-allylmercapto-	95*
853	-----, 2-(2-methylallylmercapto)-	95*

TABLE II

Code No.	Classification and Name	Repellency Index
	THIOCARBAMATES	
	Substituted	
	Ammonium compounds.	
2242	(p-mercaptophenyl)trimethyl ----- iodide, methylthiol-carbamate	77.7
2241	(5-mercapto-o-tolyl)trimethyl ----- iodide, methylthiol-carbamate	91.9*
13	Benzothiazole, 6-amino-2-mercapto-	-210
1967	Carbamic acid, dimethyldithio-, 2,4-dinitrophenyl ester	76
1982	Hydrosulfamine, S-(methylphenylthiocarbamyl)-	84
66	4-Morpholinecarbodithioic acid, iron(III) salt	41.8
404, 2665	Rhodanine	45.8, 87.1*
479, 1470	1,3,5,2H-Thiadiazine-2-thione, 4,6-diamino-	58.2, 70.3
101	Thiazole, 2,2'-dithiobis[4,5-dimethyl- and Thiazole, 2,2'-dithiobis[4-ethyl-	75.4
288, 1231	2,4-Thiazolidinedione	45.1, 83.5
854	2-Thiazoline, 2-[2-(2-butoxyethoxy)ethylmercapto]-	76
855	-----, 2-[2-(2-chloroethoxy)ethylmercapto]-	86*
2187, 1702	-----, 5-methyl-2-[1-(2-methylallyl)-2-imidazolin-2-ylmethylmercapto]-	92*, 75
862	-----, 2-(2-phenoxyethylmercapto)-	34
857	-----, 2-(2,4,6-trichlorobenzylmercapto)-	84
	THIOCARBOHYDRAZIDES	
325, 1725	Carbohydrazide, 1,5-diphenyl-3-thio-	63.4, 41
	THIOCARBONATES	
5	Carbonic acid, trithio-, dimethyl ester	81.3
305	Xanthic acid, ethyl-, ethyl ester	50
302	potassium salt	81
	THIOCARBOXYLATES	
	Unsubstituted	
562	Benzoic acid, thiol-	-63
2636	benzyl ester	83.4
1882	Oxalic acid, dithiol-, diethyl ester	80
762	Phthalic acid, dithiol-	64.4
1335	Thiacoumarin	93*
	Substituted	
651	Anthranilic acid, thiol-	-22
563	Benzoic acid, o-chlorothiol-	15
564	-----, p-chlorothiol-	-8
567	-----, 2,4-dichlorothiol-	44
568	-----, 3,4-dichlorothiol-	40.5
566	-----, m-nitrothiol-	30.5
565	-----, p-nitrothiol-	4
84	-----, thiol-, 2-benzothiazolyl ester	17

TABLE II

Code No.	Classification and Name	Repellency Index
	THIOCYANATES AND ISOTHIOCYANATES	
	Unsubstituted	
1391	Isothiocyanic acid, allyl ester	8
1600	diester with 1,3-cyclohexanediol	97.2*
1599	diester with 4,4'-methylenedicyclohexanol	-25
1624	ester with 1,2,3,4,4a,9a-hexahydro-1,4-methanofluoren-2-ol	87.2*
1621	ester with 3a,4,5,6,7,7a-hexahydro-4,7-methanoinden-6-ol	86.7*
1550	ethyl ester	11
1549	methyl ester	7
1	1-naphthyl ester	57
1222	Thiocyanic acid, benzyl ester	100*
1230	tert-butyl ester	87.7*
1921	diester with ethylene glycol	100*
2612, 874	dodecyl ester	72, 75.2
2672	x-kerylbenzyl ester	43.4
	Substituted	
953	Acetic acid, thiocyano-, x-chloroisobornyl ester	56
1233	ethyl ester	92.1*
2609	2-p-menthyl ester	87.1*
1227	octyl ester	76.5
2142	Isothiocyanic acid, ester with N-(2-pyrimidyl)-1-phenol-4-sulfonamide	-59
1226	Thiocyanic acid, acetonyl ester	100*
1620	diester with diethylene glycol	92*
1321	diester with 4-methoxy-m-xylene-a,a'-diol	81
1627	ester with 2-[2-(p-1,1,3,3-tetramethylbutylphenoxy) ethoxy]ethanol	85.3*
1622	p-dimethylaminophenyl ester	82.8
1812, 40	2,4-dinitrophenyl ester	66.6, 74
2427	ester with p-hydroxyacetophenone	98*
2306	triaminomethyl ester	53.7
	THIOLS	
	Unsubstituted	
181	Benzenethiol	71
346	copper(II) derivative	64
80	1-Dodecanethiol	65.5
347	copper(II) derivative	11
75, 1816	1-Hexadecanethiol	-155, 3
1416	1-Naphthalenethiol	83
304, 1029	2-Naphthalenethiol	71.3, 46
448	sodium derivative	67.6
79	1-Octadecanethiol	59.2
1815, 76	1-Tetradecanethiol	25, -20
1417	o-Toluenethiol	46
297, 1415	p-Toluenethiol	75, 52
527	sodium derivative	32.8
	Substituted	
109	Acetic acid, mercapto-	86*

TABLE II

Code No.	Classification and Name	Repellency Index
	THIOLS	
	Substituted	
108	Acetic acid, mercapto- ammonium salt	63
220	copper(II) derivative, calcium salt	56
313	copper(II) derivative, copper(II) salt	43.5
241	copper(II) derivative, disodium salt	18.5
2618	isobornyl ester	95.4*
221	lead(II) derivative, lead(II) salt	31
315	lithium derivative, lithium salt	92.8*
215	mercury(II) derivative, barium salt	-109
342	nickel(II) derivative	22
314	sodium derivative, sodium salt	87.7*
301, 242	sodium salt	47, 31
316	zinc derivative	85.8*
470	Ammelide, dithio-	65.9
199, 758	Benzoic acid, o-mercapto-	50, 86*
13	Benzothiazole, 6-amino-2-mercapto-	-210
1085	2-mercapto-7-phenyl-	-23
17	2-Benzoxazolethiol	56
2279	Pyridine, 2-(2-mercaptoethyl)-, picrate	95.9*
2388	2-Pyrimidinethiol, 4,6-diamino-, sodium derivative	18
2659	1,3,6H-Thiazine-2-thiol, 4,6,6-trimethyl-	95.6*
2631, 106	2-Thiazolethiol, 4,5-dimethyl- and 2-Thiazolethiol, 4-ethyl-	88.3*, 68
12	-----, 4-phenyl-	64.3
475	s-Triazine-2-thiol, 4,6-diamino-	46
1168	Uracil, 6-amino-2-thiol-	-30
	THIONES	
470	Ammelide, dithio-	65.9
863	2(3H)-Benzothiazolethione, 3-methyl-	58
1596	2,4-Diazabicyclo[3.3.1]nonane-3-thione	8.2
1625, 1685	2-Imidazolidinethione	58.5, 60
2499	4(1H)-Quinolinethione, 1-methyl-	94.9*
860	Urazole, 1-phenyl-3,5-dithio-	77
	THIOSEMICARBAZIDES	
1904	Dithizone	92*
1772a	Semicarbazide, 4-allyl-1-phenyl-3-thio-	-23
1138	-----, 1-phenyl-3-thio-	68
296	-----, 4-phenyl-3-thio-	81.5 (T)
1771a	-----, 3-thio-	93.6*
	THIOSEMICARBAZONES	
	Unsubstituted	
2092	Acetaldehyde, thiosemicarbazone	(T)
2089	Acetone, 4-phenyl-3-thiosemicarbazone	80.7
1769a, 2337	thiosemicarbazone	(T)
1762	Acetophenone, thiosemicarbazone	100*
1863	Benzaldehyde, thiosemicarbazone	100*
2091	2-Butanone, 4-phenyl-3-thiosemicarbazone	89.7* (T)
2042	thiosemicarbazone	(T)

TABLE II

Code No.	Classification and Name	Repellency Index
	THIOSEMICARBAZONES	
	Unsubstituted	
2043	3-Buten-2-one, 4-phenyl-, thiosemicarbazone	100*
1916	Butyraldehyde, thiosemicarbazone	87.7*
2044	Caproaldehyde, thiosemicarbazone	100*
1602	-----, β,δ,δ-trimethyl-, thiosemicarbazone	91*
2039	Cinnamaldehyde, thiosemicarbazone	-61
2093	Crotonaldehyde, thiosemicarbazone	(T)
2040	Cyclohexanone, thiosemicarbazone	(T)
1601	Enanthaldehyde, thiosemicarbazone	98*
2041	Formaldehyde, thiosemicarbazone	-5
1918	Isobutyraldehyde, thiosemicarbazone	98.8*
2090	Isovaleraldehyde, thiosemicarbazone	(T)
1915	Propionaldehyde, thiosemicarbazone	(T)
	Substituted	
1753	Anisaldehyde, thiosemicarbazone	46
1756	Benzaldehyde, p-chloro-, thiosemicarbazone	28
1765a	-----, p-dimethylamino-, thiosemicarbazone	79
1770a	-----, p-hydroxy-, thiosemicarbazone	17.5
1768a	Glucose, thiosemicarbazone	40
2316	Ketone, methyl 2-thienyl, thiosemicarbazone	55 (T)
1755	Piperonal, thiosemicarbazone	70
2088	Salicylaldehyde, 4-phenyl-3-thiosemicarbazone	0
1752	thiosemicarbazone	65
1766a	5-chloro-, thiosemicarbazone	12
1603	2-Thiophenecarboxaldehyde, thiosemicarbazone	90*
1754	Vanillin, thiosemicarbazone	5.5
	THIOUREAS	
	Unsubstituted	
766	Carbanilide, 4,4'-dimethylthio-	0.5
1319, 1178		
396, 251	-----, thio-	85*,29.5, 54, 37
2086	compound with 1 f. wt. of mercury(II) chloride	43
1596	2,4-Diazabicyclo[3.3.1]nonane-3-thione	8.2
1685, 1625		
1174	2-Imidazolidinethione	58.5, 60, 71
1326	Pseudourea, 2-benzyl-2-thio-, monohydrochloride	90
2391	-----, 2,2'-hexamethylenebis[2-thio-, dihydrobromide	84
1979	-----, 2-(1-naphthylmethyl)-2-thio-, hydrochloride	72
11	Thiazole, 2-amino-4-(4-biphenylyl)-	-60
287	-----, 2-amino-	79
19	-----, 2-amino-4-methyl-, hydrochloride	75.7
365, 395		
2307, 2426	Thiosinamine	90*, 72, 73, 87*
1161	Urea, 1-allyl-3,3-diamyl-2-thio-	94*
1164	-----, 1-allyl-3-isobutyl-2-thio-	83
1175	-----, 1-allyl-3-(1-naphthyl)-2-thio-	35
1154	-----, 1-allyl-3-phenyl-2-thio-	95*
1159	-----, 1-allyl-2-thio-3-m-tolyl-	93.4*
1157	-----, 1-allyl-2-thio-3-o-tolyl-	88*
1155	-----, 1-allyl-2-thio-3-p-tolyl-	95*
772	-----, 1-(2-biphenylyl)-2-thio-	(T)
2581	-----, 1,3-bis(hydroabietyl)-2-thio-	-162

TABLE II

Code No.	Classification and Name	Repellency Index
	THIOUREAS	
	Unsubstituted	
397	Urea, 1-butyl-2-thio-	91*
1597	-----, 1,1'-(1,3-cyclohexylene)bis[2-thio-	37
398, 247	-----, 1,3-dibutyl-2-thio-	81, 69
324	-----, 1,3-diethyl-2-thio-	83
1614	-----, 1-(1,2,3,4,4a,9a-hexahydro-1,4-methanofluoren-2-yl)-2-thio-	78.4
1613	-----, 1-(3a,4,5,6,7,7a-hexahydro-4,7-methanoinden-6-yl)-2-thio-	68.4
1598	-----, 1,1'-(methylenedi-1,4-cyclohexylene)bis[2-thio-	37
2329	-----, 1-(1-naphthyl)-3-octyl-2-thio-	76
1076	-----, 1-(1-naphthyl)-2-thio-	(T)
2084	-----, thio-, compound with 1/4 f. wt. of ammonium chloride	88*
1643	copper(II) derivative	54
52	-----, 2-thio-1,3-di-x,x-xylyl-	67.3
1176, 39	-----, 2-thio-1-o-tolyl-	-66 (T)
38	-----, 2-thio-1-p-tolyl-	(T)
	Substituted	
470	Ammelide, dithio-	65.9
309	Barbituric acid, 2-thio-	52
455	disodium derivative	69
1169	Biurea, 1,6-diphenyl-2,5-dithio-	23
1165	-----, 2,5-dithio-	12
858	Biuret, 1,1'-(4,4'-biphenylene)bis[dithio-	-75
837	-----, 1,5-dicyclohexylidene-2,4-dithio-	92*
4, 811, 812	-----, 2,4-dithio-	83.3, 88* (T)
814	disodium salt	90*
1616	-----, 1-phenyl-2,4-dithio-	85*
636	Carbanilide, 2,2'-dichlorothio-	43.6
1156	-----, thio[3,3'-bis(trichloromethyl)]-	89*
1172, 308	Hydantoic acid, δ-phenyl-γ-thio-	56, 64
532	diammonium derivative, copper(II) salt	7
533	disodium derivative, copper(II) salt	-31
457	sodium derivative, sodium salt	33.9
330	Hydantoin, 1-benzoyl-2-thio-	21.8
329	-----, 5-benzylidene-2-thio-	70.1
1167	Maleanilic acid, N-(phenylthiocarbamyl)-	16
1177	4-Morpholinecarboxamide, N-allylthio-	81
1536	2,5-Piperazinedione, 3,6-bis(guanylmercapto)-, dihydrochloride	56
214, 348	Propionic acid, β-(guanylmercapto)-	-0.5 (T), 45.2
1610	Pseudourea, 2-[2-(p-1,1,3,3-tetramethylbutylphenoxy) ethyl]-2-thio-, hydrobromide	88*
1170	s-Triazine-2(1H)-thione, 5-alkyltetrahydro-(alkyl = C_8-C_{18}, chiefly dodecyl)	18
1166	-----, 5-cyclohexyltetrahydro-	89*
1171	-----, tetrahydro-5-(2-hydroxyethyl)-	54
1168	Uracil, 6-amino-2-thio-	-30
860	Urazole, 1-phenyl-3,5-dithio-	77
1322	Urea, 1-acetyl-2-thio-	28
1162	-----, 1-allyl-3-(m-nitrophenyl)-2-thio-	92.1*
1160	-----, 1-allyl-3-(p-phenetyl)-2-thio-	62
2138	-----, 1-(p-bromophenyl)-2-thio-	74

TABLE II

Code No.	Classification and Name	Repellency Index
	THIOUREAS	
	Substituted	
775	Urea, 1-(5-chloro-2-methoxyphenyl)-2-thio-	(T)
637	-----, 1,1'-(4-chloro-o-phenylene)bis[2-thio-	92* (T)
634	-----, 1-(m-chlorophenyl)-2-thio-	91.5*
633	-----, 1-(o-chlorophenyl)-2-thio-	(T)
635	-----, 1-(p-chlorophenyl)-2-thio-	(T)
2340, 770		
1077	-----, 1-(3-chloro-o-tolyl)-2-thio-	(T)
1158	-----, 1-dodecyl-3-p-phenetyl-2-thio-	20
1114	-----, 1-(p-methoxyphenyl)-2-thio-	(T)
	THIURAMS	
250	Disulfide, bis(dibutylthiocarbamyl)	75
95	-----, bis(diethylthiocarbamyl)	69
281	-----, bis(diisopropylthiocarbamyl)	-48
1976, 306		
94	-----, bis(dimethylthiocarbamyl)	73, 90*, 96*
337	-----, bis(dipropylthiocarbamyl)	64
96	Sulfide, bis(diethylthiocarbamyl)	22
1977	-----, bis(dimethylthiocarbamyl)	99*
	TIN COMPOUNDS	
33	Tin, tetraphenyl-	22
	TRIAZENES	
1765	Triazene, 1,3-diphenyl-	93*
	UNKNOWN STRUCTURES	
645	A-10 (Condensation product of aniline and formaldehyde)	68.6
644	A-19 (Condensation product of acetaldehyde, aniline and formaldehyde)	48
643	A-32 (Condensation product of N-butylideneaniline and butyraldehyde)	91*
1087	A-77 (Condensation product of acetaldehyde and aniline)	64
1086	A-100 (Condensation product of acetaldehyde and butyraldehyde)	58
1225, 1232	Ammonium thiocyanate resin	-92.9, -64.9
482, 485	Castor oil, phosphated	67, 61
486	sodium salt	34
665	Condensation product of isopropylamine and zinc dimethyldithiocarbamate	75
648	Flectol H (Condensation product of acetone and aniline)	51
2133	Maleamic acid, peptide condensation product	10
667	P. S. (Condensation product of acetaldehyde, aniline and butyraldehyde)	94.6*
646	R-2 (Condensation product of carbon disulfide and x,x-methylenedipiperidine)	79.6
2575	Rosin amine, complex with 1 f. wt. ethylene oxide (mixture of abietylamines in various stages of hydrogenation)	95.1*
2576	complex with 2 f. wt. ethylene oxide (mixture of abietylamines in various stages of hydrogenation)	92.1*

TABLE II

Code No.	Classification and Name	Repellency Index
	UNKNOWN STRUCTURES	
641	Santoflex B (Condensation product of acetone and xenylamine)	47
639	Santolite K (Condensation product of alkyl resins, formaldehyde and toluenesulfonamide)	55
640	Santolite MHP (Condensation product of aromatic sulfonamide and formaldehyde)	4
638	Santolite MS (Condensation product of aromatic sulfonamide and formaldehyde)	69
	UREAS	
	Unsubstituted	
2450	Urea, compound with 1/6 f. wt. aluminum triiodide sulfate	-36
489	monophosphate	41
1763	-----, allyl-	85*
246, 753	-----, 1,3-dibutyl-	84.7, 62.8
777	-----, methyl-	34
202	-----, phenyl-	10.4
387	-----, 1,1,3,3-tetrabutyl-	86.5*
	Substituted	
1907	Alloxan	-18
1108	monohydrate	24
399	Allantoin	-70.5
610	Barbituric acid, 5,5'-salicylidenedi-	-15
248	Biuret	53.4
467	-----, 1-benzoyl-	21.5
1855	Formamide, α-(2,6-dichloro-4-hydroxyphenylazo)-	25
859	Formic acid, dithiobis[thiono-, diethyl ester	96*
2637, 103	diisopropyl ester	60.9, 93.1*
844	Hydantoic acid, α,α-dimethyl-, sodium salt	-5
1446	Hydantoin, 5-isobutyl-5-methyl-	36
1488	Urea, 1-benzoyl-3-guanyl-	51
2436	-----, 1,3-diantipyryl-	16
160, 468	-----, guanyl-, hemisulfate, monohydrate	22.5, 91.7*
1883, 1732	monosulfate	70, 83
1475	-----, (5-heptadecyl-1,2,4,1H-triazol-3-yl)-	-73
2583	-----, (4-morpholinylmethyl)-	80.7
1489	-----, (3-phenyl-1,2,4-oxadiazol-5-yl)-	42
1473	-----, (5-phenyl-1,2,4,4H-triazol-3-yl)-	-6
1504	-----, propionyl-	-128
717	Uric acid	-68.1
	XANTHATES	
	See Thiocarbonates	

TABLE II

Code No.	Classification and Name	Repellency Index
	ZINC COMPOUNDS**	
316	Acetic acid, mercapto-, zinc derivative	85.8*
2393	Basic Orange 3RN	84
345	Benzoic acid, p-chloro-, zinc salt	10
82	Carbamic acid, dibutyldithio-, zinc salt	-36
63	-----, diethyldithio-, zinc salt	-22
65, 272	-----, diisopropyldithio-, zinc salt	20, -49.5
81	-----, dimethyldithio-, zinc salt	80
60	-----, ethylenebis[dithio-, zinc salt	38
69	-----, hexamethylenebis[dithio-, zinc salt	-52
2273	Dodecylamine, compound with 1 f. wt. zinc chloride	72.5
2117	10-Hendecenoic acid, zinc salt	48
1734, 349	Naphthenic acid, zinc salt	25.4, 59
244	1-Phenol-2-sulfonic acid, zinc salt	-4
2123	Phytic acid, hexazinc salt	-40
2577	Rosin amine, compound with zinc dimethyldithiocarbamate (mixture of abietylamines in various stages of hydrogenation)	89.7*

** See also Inorganic Compounds

NATIONAL RESEARCH COUNCIL

The National Research Council is a cooperative organization of the scientific men of America. It was established in 1916 by the National Academy of Sciences and is supported by the cooperation of the major scientific and technical societies of the country.

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The data in the files of the Center are available to representatives of the sponsoring agencies, the screening agencies, and to authorized scientists generally upon request. The sponsoring agencies are the Atomic Energy Commission, the Department of the Army, the Department of the Navy, the U. S. Public Health Service and the American Cancer Society.