CLASS 549, ORGANIC COMPOUNDS -- PART OF THE CLASS 532-570 SERIES

SUBCLASSES

1 This subclass is indented under subclass 1. Compounds under Class 540, ... which contain a hetero ring having sulfur as a ring hetero atom.

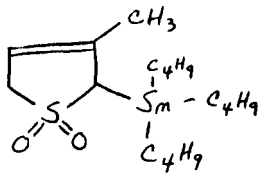
(1) Note. Inner sulfonium salts, even when represented in cyclic form, are classified under Class 568, subclasses 18+.

2 This subclass is indented under subclass 1. Compounds which occur in admixture with agents which function to prevent physical or chemical change.

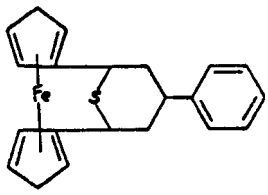
3 This subclass is indented under subclass 1. Compounds which include aluminum or a metal with a specific gravity greater than 4.

(1) Note. Arsenic is considered a metal for the purpose of this subclass.

(2) Note. Examples of compounds provided for herein are:

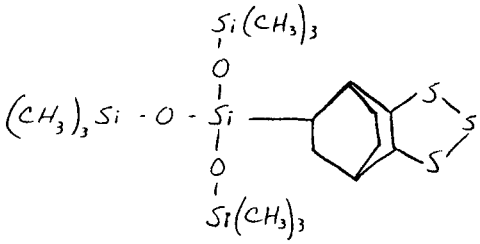


and

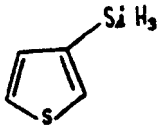


4 This subclass is indented under subclass 1. Compounds which include boron or silicon.

(1) Note. Examples of compounds provided for herein are:

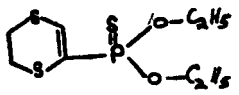


and

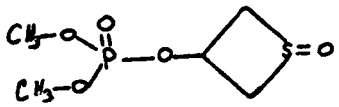


5 This subclass is indented under subclass 1. Compounds wherein phosphorus is attached directly or indirectly to the hetero ring by non-ionic bonding.

(1) Note. Examples of compounds provided for herein are:



and



6 This subclass is indented under subclass 5. Compounds wherein the hetero ring is five-membered.

7 This subclass is indented under subclass 6. Compounds wherein the five-membered hetero ring contains at least one ring hetero atom in addition to the ring sulfur.

8 This subclass is indented under subclass 6. Compounds having exactly four chalcogens (i.e., oxygen, sulfur, selenium, or tellurium) bonded directly to the same phosphorus atom.

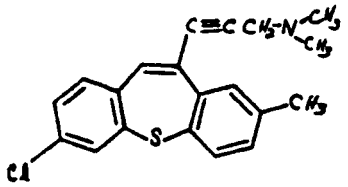
9 This subclass is indented under subclass 1. Compounds wherein the hetero ring has seven or more members.

10 This subclass is indented under subclass 9. Compounds wherein the hetero ring contains at least one hetero atom in addition to the ring sulfur.

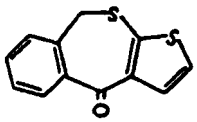
11 This subclass is indented under subclass 10. Compounds wherein the hetero ring contains at least two ring sulfurs.

12 This subclass is indented under subclass 9. Compounds wherein the hetero ring having at least seven members is a cyclo in a polycyclo ring system containing at least three cyclos.

(1) Note. Examples of compounds provided for herein are:



and



13 This subclass is indented under subclass 1. Compounds wherein the hetero ring is six-membered.

14 This subclass is indented under subclass 13. Compounds wherein the hetero ring contains at least one ring hetero atom in addition to the ring sulfur.

15 This subclass is indented under subclass 14. Compounds wherein the hetero ring is one of the cyclos of a polycyclo ring system.

16 This subclass is indented under subclass 15. Compounds wherein the polycyclo ring system consists of exactly three rings.

17 This subclass is indented under subclass 16. Compounds wherein the hetero ring contains at least two ring sulfurs.

18 This subclass is indented under subclass 14. Compounds wherein the six-membered hetero ring contains at least two ring hetero atoms in addition to the ring sulfur.

19 This subclass is indented under subclass 18. Compounds wherein the hetero ring contains at least two ring sulfurs.

20 This subclass is indented under subclass 14. Compounds wherein the hetero ring contains exactly two ring sulfurs.

21 This subclass is indented under subclass 20. Compounds wherein nitrogen or chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly to the hetero ring by nonionic bonding.

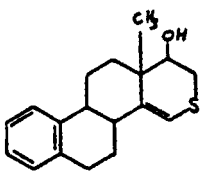
22 This subclass is indented under subclass 20. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) or nitrogen is attached indirectly to the hetero ring by non-ionic bonding.

23 This subclass is indented under subclass 13. Compounds wherein the six-membered hetero ring is one of the cyclos of a polycyclo ring system.

24 This subclass is indented under subclass 23. Compounds wherein the polycyclo ring system has at least four cyclos.

25 This subclass is indented under subclass 24. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly to the hetero ring by nonionic bonding.

(1) Note. Examples of compounds provided for herein are:



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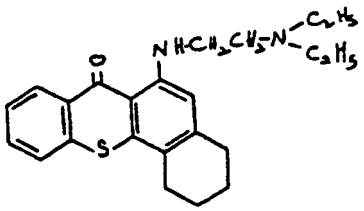
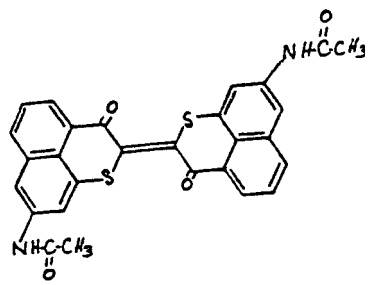


26 This subclass is indented under subclass 23. Compounds wherein the polycyclo ring system consists of exactly three rings.

27 This subclass is indented under subclass 26. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly to the hetero ring by nonionic bonding.

(1) Note. An example of a compound provided for herein is:



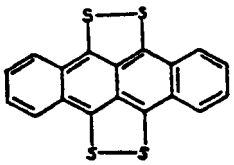
28 This subclass is indented under subclass 13. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) or nitrogen is attached directly to the hetero ring by nonionic bonding.

29 This subclass is indented under subclass 1. Compounds wherein the hetero ring is five-membered.

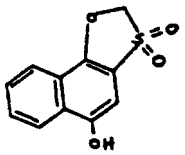
30 This subclass is indented under subclass 29. Compounds wherein the hetero ring contains at least one ring hetero atom in addition to the ring sulfur.

31 This subclass is indented under subclass 30. Compounds wherein the hetero ring is one of the cyclos of a polycyclo ring system.

(1) Note. Examples of compounds provided for herein are:

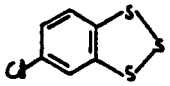


and

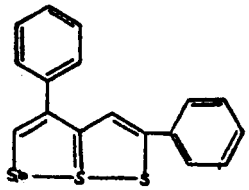


32 This subclass is indented under subclass 31. Compounds wherein the polycyclo ring system consists of exactly two rings.

(1) Note. Examples of compounds provided for herein are:

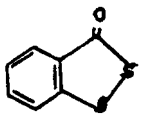


and

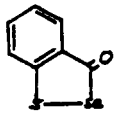


33 This subclass is indented under subclass 22. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly to the hetero ring by nonionic bonding.

(1) Note. Examples of compounds provided for herein are:

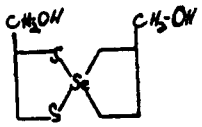


and

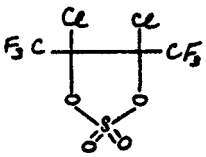


34 This subclass is indented under subclass 30. Compounds wherein the hetero ring contains at least two ring hetero atoms in addition to the ring sulfur.

(1) Note. Examples of compounds provided for herein are:



and

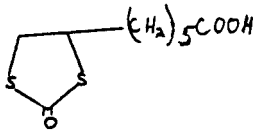


35 This subclass is indented under subclass 30. Compounds wherein the hetero ring contains exactly two ring sulfurs.

36 This subclass is indented under subclass 35. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to ring carbon of the hetero ring.

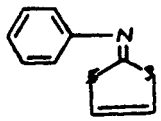
37 This subclass is indented under subclass 36. Compounds wherein nitrogen or chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the hetero ring by nonionic bonding.

(1) Note. An example of a compound provided for herein is:



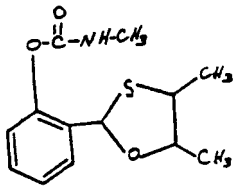
38 This subclass is indented under subclass 35. Compounds wherein nitrogen is attached directly to the hetero ring by nonionic bonding.

(1) Note. An example of a compound provided for herein is:



39 This subclass is indented under subclass 35. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly to the hetero ring by nonionic bonding.

(1) Note. An example of a compound provided for herein is:



40 This subclass is indented under subclass 30. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly to ring sulfur of the hetero ring by nonionic bonding.

41 This subclass is indented under subclass 29. Compounds wherein the five-membered hetero ring is one of the cyclos of a polycyclo ring system.

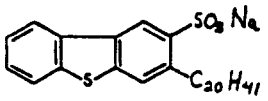
42 This subclass is indented under subclass 41. Compounds wherein the polycyclo ring system consists of exactly four rings.

43 This subclass is indented under subclass 41. Compounds wherein the polycyclo ring system consists of exactly three rings.

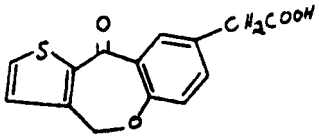
44 This subclass is indented under subclass 43. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached

directly to the tricyclo ring system by nonionic bonding.

(1) Note. Examples of compounds provided for herein are:

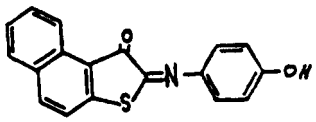


and



45 This subclass is indented under subclass 44. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly to the hetero ring by nonionic bonding.

(1) Note. An example of a compound provided for herein is:

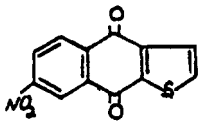


46 This subclass is indented under subclass 45. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly to ring sulfur of the hetero ring by nonionic bonding.

47 This subclass is indented under subclass 45. Compounds wherein halogen is attached directly to the tricyclo ring system by nonionic bonding.

48 This subclass is indented under subclass 44. Compounds wherein nitrogen is attached directly or indirectly to the tricyclo ring system by nonionic bonding.

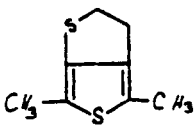
(1) Note. An example of a compound provided for herein is:



49 This subclass is indented under subclass 41. Compounds wherein the polycyclo ring system consists of exactly two rings.

50 This subclass is indented under subclass 49. Compounds wherein the bicyclo ring system contains at least one ring hetero atom in addition to the ring sulfur of the five-membered hetero ring.

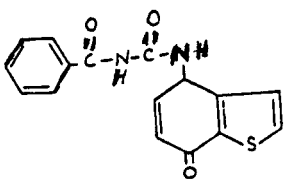
(1) Note. Examples of compounds provided for herein are:



and

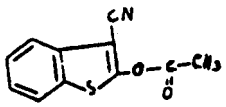
51 This subclass is indented under subclass 49. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly to the bicyclo ring system by nonionic bonding.

(1) Note. An example of a compound provided for herein is:

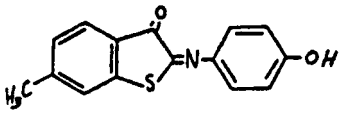


52 This subclass is indented under subclass 51. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly to the hetero ring by nonionic bonding.

(1) Note. Examples of compounds provided for herein are:



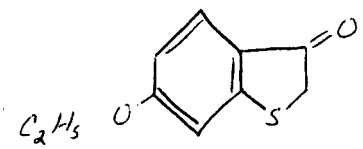
and



53 This subclass is indented under subclass 52. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly to the ring sulfur of the five-membered hetero ring by nonionic bonding.

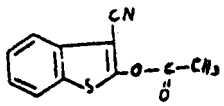
54 This subclass is indented under subclass 52. Compounds wherein at least two chalcogens (i.e., oxygen, sulfur, selenium, or tellurium) are bonded directly to the bicyclo ring system.

(1) Note. An example of a compound provided for herein is:

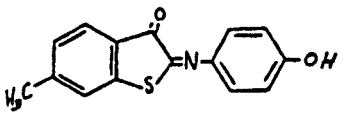


55 This subclass is indented under subclass 52. Compounds wherein nitrogen is attached directly or indirectly to the bicyclo ring system by nonionic bonding.

(1) Note. Examples of compounds provided for herein are:



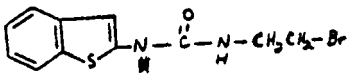
and

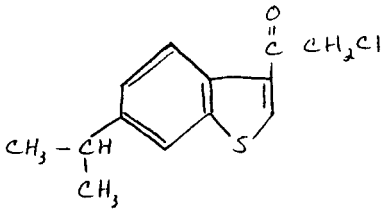


56 This subclass is indented under subclass 52. Compounds wherein halogen is attached directly or indirectly to the bicyclo ring system by nonionic bonding.

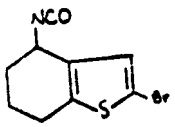
57 This subclass is indented under subclass 49. Compounds wherein X nitrogen or --, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), is attached directly to the bicyclo ring system by nonionic bonding.

(1) Note. Examples of compounds provided for herein are:





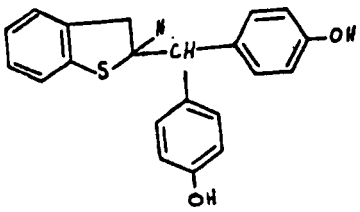
and



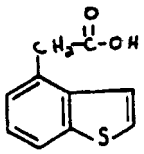
58 This subclass is indented under subclass 49. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indi-

rectly to the bicyclo ring system by nonionic bonding.

(1) Note. Examples of compounds provided for herein are:

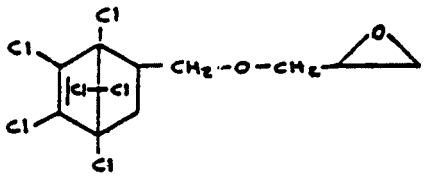


and

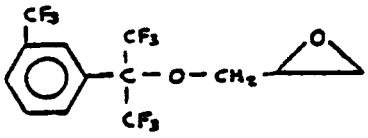


59 This subclass is indented under subclass 29. Compounds which contain an additional hetero ring.

(1) Note. Examples of compounds provided for herein are:

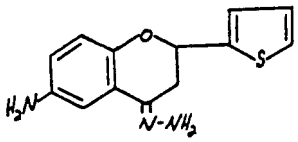


and



60 This subclass is indented under subclass 59. Compounds wherein the additional hetero ring contains oxygen as a ring hetero atom.

(1) Note. An example of a compound provided for herein is:

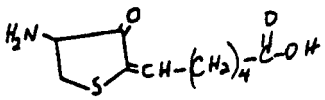


61 This subclass is indented under subclass 29. Compounds wherein the -CN group is bonded directly to ring carbon of the hetero ring.

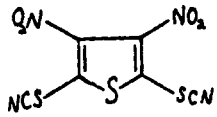
62 This subclass is indented under subclass 29. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to ring carbon of the hetero ring.

63 This subclass is indented under subclass 62. Compounds wherein nitrogen is attached directly to the hetero ring by nonionic bonding.

(1) Note. Examples of compounds provided for herein are:



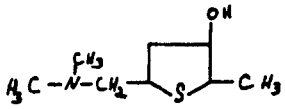
and



64 This subclass is indented under subclass 62. Compounds wherein --, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), is bonded directly to the hetero ring.

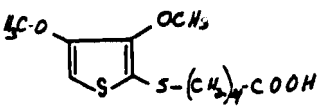
65 This subclass is indented under subclass 62. Compounds wherein nitrogen is attached indirectly to the hetero ring by nonionic bonding.

(1) Note. An example of a compound provided for herein is:

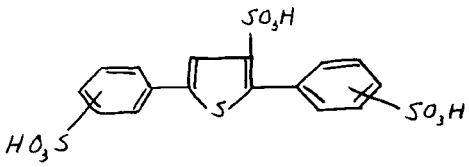


66 This subclass is indented under subclass 62. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the hetero ring by nonionic bonding.

(1) Note. Examples of compounds provided for herein are:



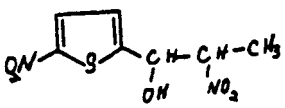
and



67 This subclass is indented under subclass 62. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly to ring sulfur of the hetero ring by nonionic bonding.

68 This subclass is indented under subclass 29. Compounds wherein nitrogen is attached directly to the hetero ring by nonionic bonding.

(1) Note. An example of a compound provided for herein is:

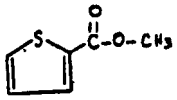


69 This subclass is indented under subclass 68. Compounds wherein --, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to the nitrogen atom.

70 This subclass is indented under subclass 29. Compounds wherein --, in which X is chalcogen, (i.e., oxygen, sulfur, selenium, or tellurium), is bonded directly to the hetero ring.

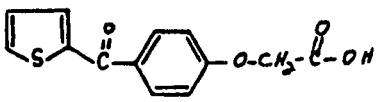
71 This subclass is indented under subclass 70. Compounds wherein the -C-is part of a --X-group, in which the X's are the same or diverse chalcogens (i.e., oxygen, sulfur, selenium, or tellurium).

(1) Note. An example of a compound provided for herein is

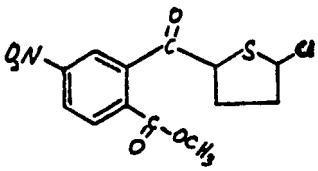


72 This subclass is indented under subclass 70. Compounds wherein nitrogen or chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the hetero ring by nonionic bonding.

(1) Note. Examples of compounds provided for herein are:



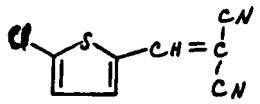
and



73 This subclass is indented under subclass 70. Compounds wherein halogen is attached directly or indirectly to the hetero ring by nonionic bonding.

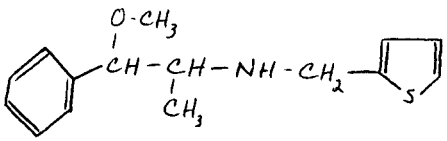
74 This subclass is indented under subclass 29. Compounds wherein nitrogen is attached indirectly to the hetero ring by nonionic bonding.

(1) Note. An example of a compound provided for herein is:



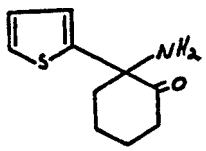
75 This subclass is indented under subclass 74. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the hetero ring by nonionic bonding.

(1) Note. An example of a compound provided for herein is:

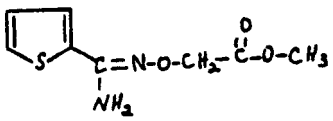


76 This subclass is indented under subclass 75. Compounds wherein the chalcogen, X (i.e., oxygen, sulfur, selenium, or tellurium), is in a --- group.

(1) Note. Examples of compounds provided for herein are:

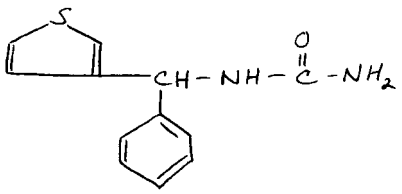


and

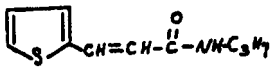


77 This subclass is indented under subclass 76. Compounds which contain an unsaturated carbocyclic ring or acyclic carbon to carbon unsaturation.

(1) Note. Examples of compounds provided for herein are:

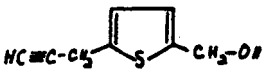


and



78 This subclass is indented under subclass 29. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the hetero ring by nonionic bonding.

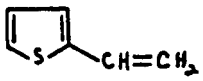
(1) Note. An example of a compound provided for herein is:



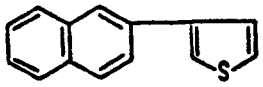
79 This subclass is indented under subclass 78. Compounds in which the chalcogen, X, is part of a --X- group, wherein the X's are the same or diverse chalcogens (i.e., oxygen, sulfur, selenium, or tellurium).

80 This subclass is indented under subclass 29. Compounds which contain an unsaturated carbocyclic ring or acyclic carbon to carbon unsaturation.

(1) Note. Examples of compounds provided for herein are:



and



81 This subclass is indented under subclass 29. Compounds wherein halogen is attached directly to the hetero ring by nonionic bonding.

82 This subclass is indented under subclass 81. Compounds wherein at least three halogen atoms are attached directly to the hetero ring by nonionic bonding.

83 This subclass is indented under subclass 29. Compounds in which the five-membered hetero ring is unsubstituted or substituted by hydrocarbon radicals only.

84 This subclass is indented under subclass 83. Processes of forming the five-membered hetero ring utilizing acyclic reactants only.

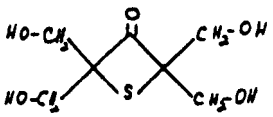
85 This subclass is indented under subclass 84. Processes which utilize a metal containing catalyst.

86 This subclass is indented under subclass 83. Processes in which the five-membered hetero ring is alkylated.

87 This subclass is indented under subclass 29. Compounds wherein at least two chalcogens (i.e., oxygen, sulfur, selenium, or tellurium) are double bonded directly to ring sulfur of the hetero ring.

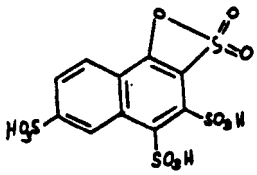
88 This subclass is indented under subclass 1. Compounds wherein the hetero ring is four-membered.

(1) Note. An example of a compound provided for herein is:

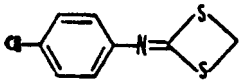


89 This subclass is indented under subclass 88. Compounds wherein the hetero ring contains at least one ring hetero atom in addition to ring sulfur.

(1) Note. Examples of compounds provided for herein are:

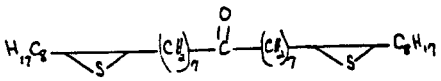


and



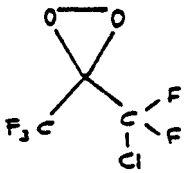
90 This subclass is indented under subclass 1. Compounds wherein the hetero ring is three-membered and contains chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) or nitrogen attached directly or indirectly thereto by nonionic bonding.

(1) Note. An example of a compound provided for herein is:



200 This subclass is indented under subclass 1. Compounds under Class 540, ... which contain a hetero ring having oxygen as a ring hetero atom.

(1) Note. An example of a compound provided for herein is:



201 This subclass is indented under subclass 200. Products which contain a compound having an oxygen containing hetero ring in admixture with a preserving or stabilizing agent whose sole function is to prevent physical or chemical change.

202 This subclass is indented under subclass 201. Products wherein the hetero ring is oxirane, i.e., a three-member hetero ring consisting of two ring carbons and one ring oxygen.

203 This subclass is indented under subclass 201. Products wherein the hetero ring is a cyclic anhydride, i.e., -C(=X)OC(=X)- is part of the ring, wherein the X's are the same or diverse chalcogens (i.e., oxygen, sulfur, selenium or tellurium).

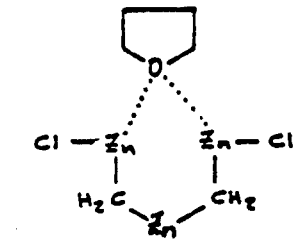
204 This subclass is indented under subclass 201. Products wherein the hetero ring is a lactone, i.e., -C(=X)0- is part of the ring, wherein X represents chalcogen (i.e., oxygen, sulfur, selenium, or tellurium).

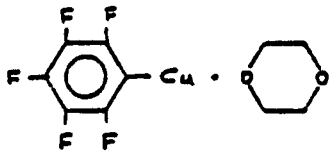
205 This subclass is indented under subclass 201. Products wherein the hetero ring is five-membered.

206 This subclass is indented under subclass 200. Compounds which include aluminum or a metal having a specific gravity greater than four.

(1) Note. Arsenic is considered a metal.

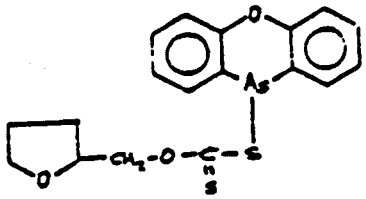
(2) Note. Examples of compounds provided for herein are:





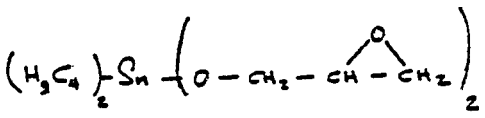
207 This subclass is indented under subclass 206. Compounds which contain arsenic.

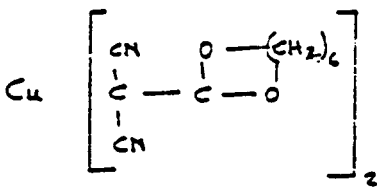
(1) Note. An example of a compound provided for herein is:



208 This subclass is indented under subclass 206. Compounds wherein the hetero ring contains either (1) three members, or (2) seven or more members.

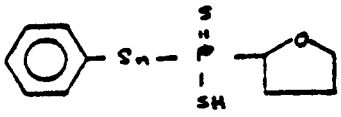
(1) Note. Examples of compounds provided for herein are:





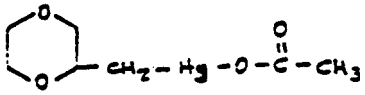
209 This subclass is indented under subclass 206. Compounds wherein the metal is bonded directly to (1) a ring carbon of the oxygen-containing hetero ring, or (2) a carbon atom which additionally is attached directly or indirectly to the oxygen-containing hetero ring by nonionic bonding.

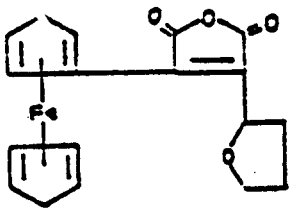
(1) Note. Excluded from this subclass are compounds such as:



which require "doubling back" through the metal to satisfy the conditions necessary for inclusion here.

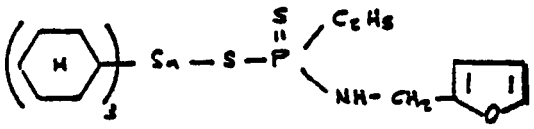
(2) Note. Examples of compounds provided for herein are:

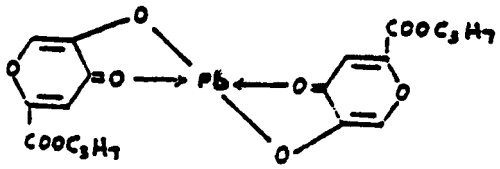




210 This subclass is indented under subclass 206. Compounds wherein the metal is bonded directly to chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), which chalcogen is attached directly or indirectly to the hetero ring by nonionic bonding.

(1) Note. Examples of compounds provided for herein are:

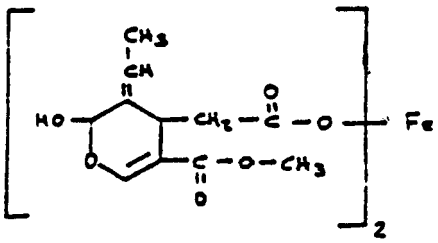


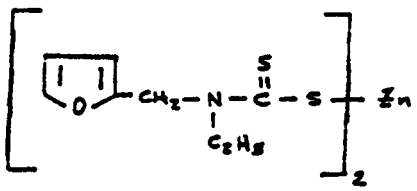


211 This subclass is indented under subclass 210. Compounds in which the chalcogen, X, is part of a --X- group, wherein the X's are the same or diverse chalcogens.

(1) Note. These compounds are usually referred to as "salts".

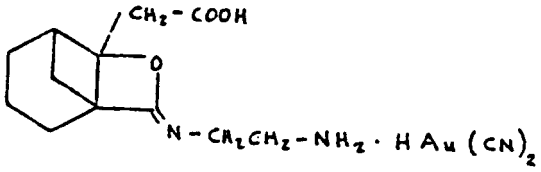
(2) Note. Examples of compounds provided for herein are:





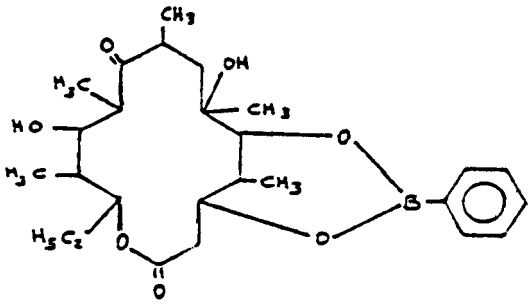
212 This subclass is indented under subclass 206. Compounds wherein the hetero ring is a cyclo in a polycyclo ring system.

(1) Note. An example of compound provided for herein is:



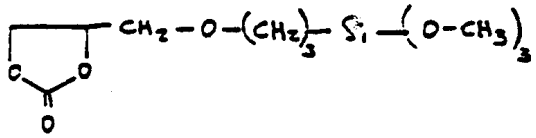
213 This subclass is indented under subclass 200. Compounds which contain boron.

(1) Note. An example of a compound provided for herein is:

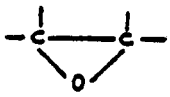


214 This subclass is indented under subclass 200. Compounds which contain silicon.

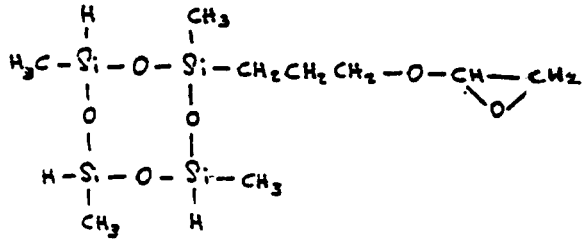
(1) Note. An example of a compound provided for herein is:



215 This subclass is indented under subclass 214. Compounds which contain a three-membered ring consisting of one oxygen and two carbons:

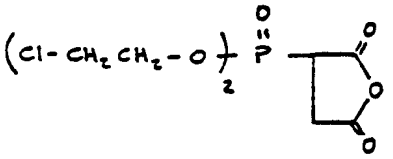


(1) Note. An example of a compound provided for herein is:



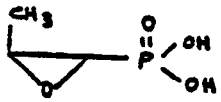
216 This subclass is indented under subclass 200. Compounds in which phosphorus is bonded directly to the hetero ring.

(1) Note. An example of a compound provided for herein is:



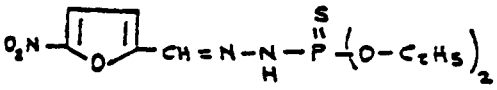
217 This subclass is indented under subclass 216. Compounds which contain a three-membered ring consisting of one oxygen and two carbons, i.e., oxirane.

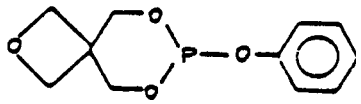
(1) Note. An example of a compound provided for herein is:



218 This subclass is indented under subclass 200. Compounds in which phosphorus is attached indirectly to the hetero ring by nonionic bonding.

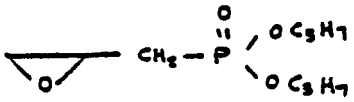
(1) Note. Examples of compounds provided for herein are:





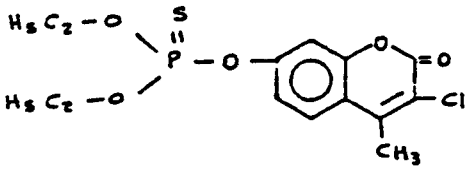
219 This subclass is indented under subclass 218. Compounds which contain a three-membered ring consisting of one oxygen and two carbons, i.e., oxirane.

(1) Note. An example of a compound provided for herein is:



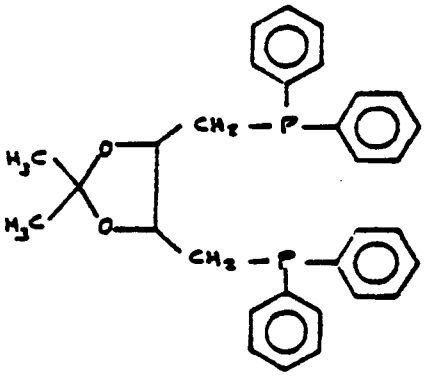
220 This subclass is indented under subclass 218. Compounds wherein the hetero ring is a cyclo in a polycyclo ring system.

(1) Note. An example of a compound provided for herein is:



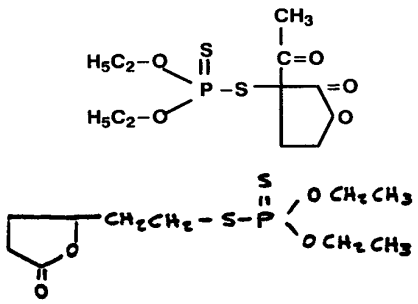
221 This subclass is indented under subclass 218. Compounds in which the hetero ring contains at least two ring oxygens.

(1) Note. An example of a compound provided for herein is:

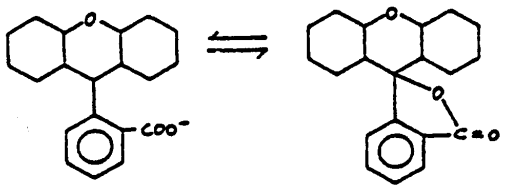


222 This subclass is indented under subclass 218. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to the hetero ring.

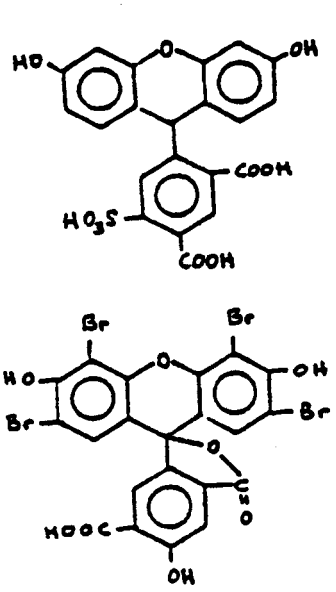
(1) Note. Examples of compounds provided for herein are



223 This subclass is indented under subclass 200. Compounds having one of the following basic structures which may contain double bonds between ring members of the tricyclo ring system:

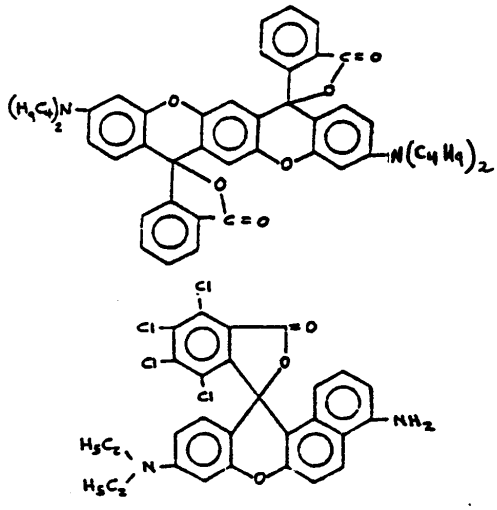


(1) Note. Examples of compounds provided for herein are:



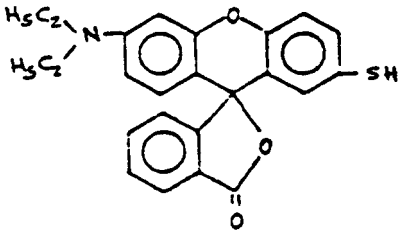
224 This subclass is indented under subclass 223. Compounds which contain the xanthene ring system as three cyclos of a polycyclo ring system containing four or more rings.

(1) Note. Examples of compounds provided for herein are:



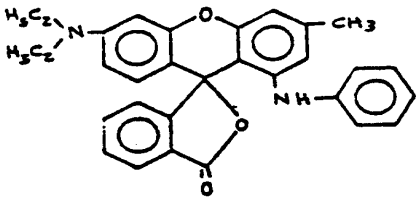
225 This subclass is indented under subclass 223. Compounds in which nitrogen is bonded directly to the xanthene ring system.

(1) Note. An example of a compound provided for herein is:

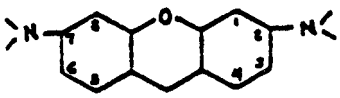


226 This subclass is indented under subclass 225. Compounds in which at least two nitrogens are bonded directly to the xanthene ring system.

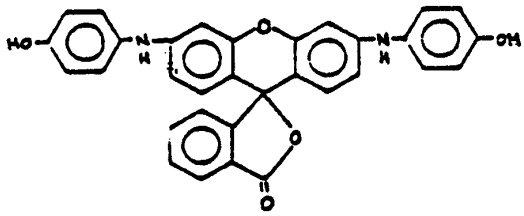
(1) Note. An example of a compound provided for herein is:



227 This subclass is indented under subclass 226. Compounds in which nitrogens are bonded directly to the xanthene ring system at the 2- and 7- positions according to the following structure:



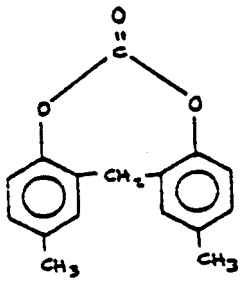
(1) Note. An example of a compound provided for herein is:

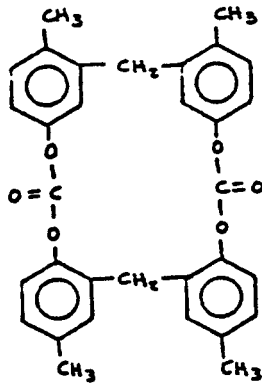


228 This subclass is indented under subclass 200. Compounds in which the hetero ring contains as part of its structure -O-C(=X)-O-, wherein X represents chalcogen (i.e., oxygen, sulfur, selenium, or tellurium).

(1) Note. This subclass includes cyclic carbonates.

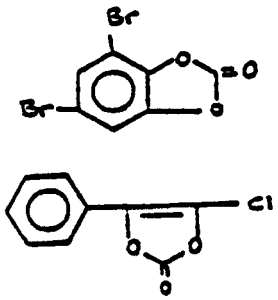
(2) Note. Examples of compounds provided for herein are:





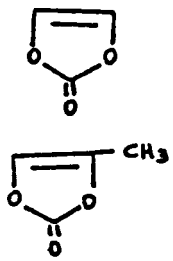
229 This subclass is indented under subclass 228. Compounds wherein the hetero ring has five ring members.

(1) Note. Examples of compounds provided for herein are:



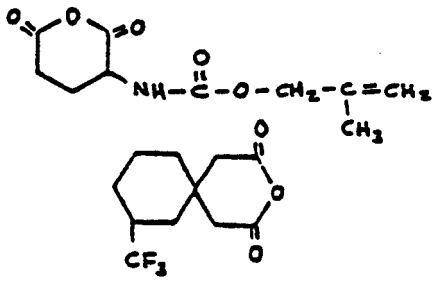
230 This subclass is indented under subclass 229. Compounds in which the five-membered hetero ring, except for the single =X to the ring, has only hydrogen or hydrocarbyl group(s) bonded to it.

(1) Note. Examples of compounds provided for herein are:



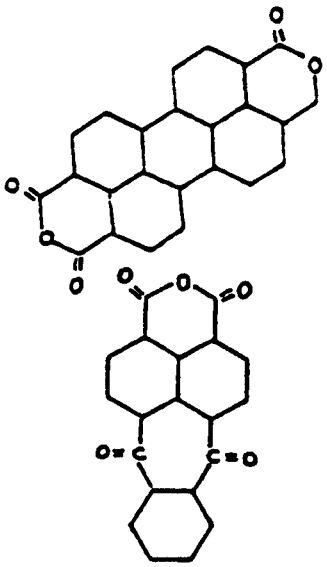
231 This subclass is indented under subclass 200. Compounds wherein the hetero ring is a cyclic anhydride; i.e., --O- is part of the ring, X's are the same or different chalcogens (i.e., oxygen, sulfur, selenium or tellurium).

(1) Note. Examples of compounds provided for herein are:



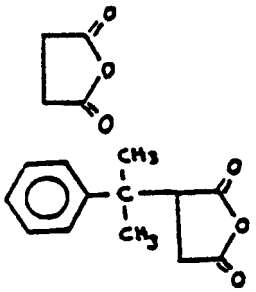
232 This subclass is indented under subclass 231. Compounds wherein the cyclic anhydride has at least six ring members and is one of the cyclos in a polycyclo ring system.

(1) Note. Examples of compounds provided for herein are:



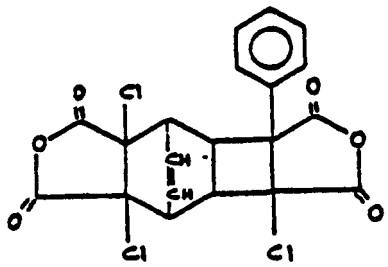
233 This subclass is indented under subclass 231. Compounds wherein the cyclic anhydride has five ring members.

(1) Note. Examples of compounds provided for herein are:



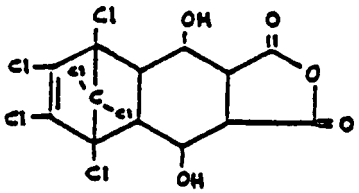
234 This subclass is indented under subclass 233. Compounds wherein the five-membered cyclic anhydride is one of the cyclos of a polycyclo ring system.

(1) Note. An example of a compound provided for herein is:



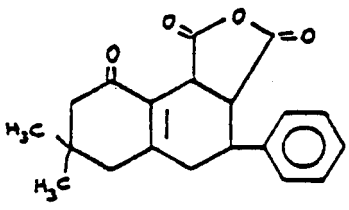
235 This subclass is indented under subclass 234. Compounds wherein the polycyclo ring system consists of exactly four rings.

(1) Note. An example of a compound provided for herein is:



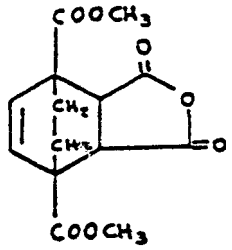
236 This subclass is indented under subclass 234. Compounds wherin the polycyclo ring system consists of exactly three rings.

(1) Note. An example of a compound provided for herein is:



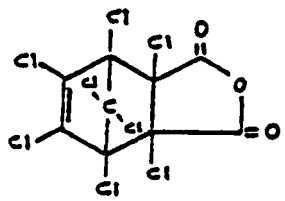
237 This subclass is indented under subclass 236. Compounds wherein at least three ring members of one cyclo are ring members of an additional cyclo in the tricyclo ring system (i.e., bridged).

(1) Note. An example of a compound provided for herein is:



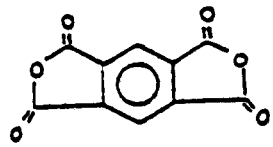
238 This subclass is indented under subclass 237. Compounds wherein halogen is bonded directly to the bridged tricyclo ring system.

(1) Note. An example of a compound provided for herein is:



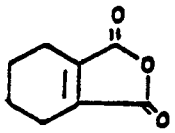
239 This subclass is indented under subclass 236. Compounds wherein the tricyclo ring system includes at least two ring oxygens.

(1) Note. An example of a compound provided for herein is:



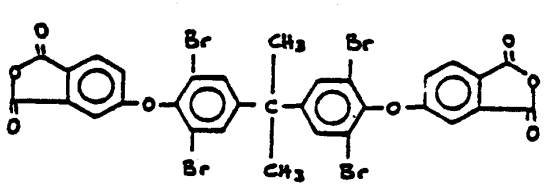
240 This subclass is indented under subclass 234. Compounds wherein the polycyclo ring system consists of exactly two rings.

(1) Note. An example of a compound provided for herein is:



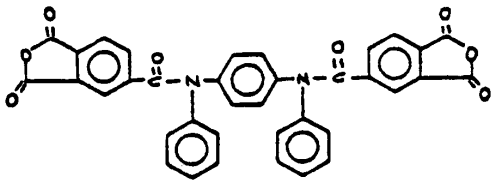
241 This subclass is indented under subclass 240. Compounds wherein at least two bicyclo ring systems, each having a cyclic anhydride as one of the cyclos, are present.

(1) Note. An example of a compound provided for herein is:



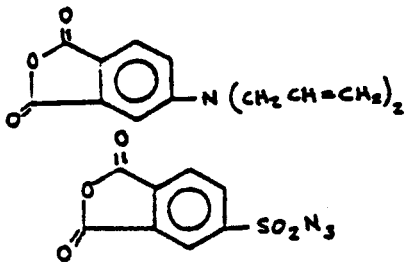
242 This subclass is indented under subclass 241. Compounds wherein a -- group, in which X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium), is bonded directly to at least one of the bicyclo ring systems that has a cyclic anhydride as one of the cyclos.

(1) Note. An example of a compound provided for herein is:



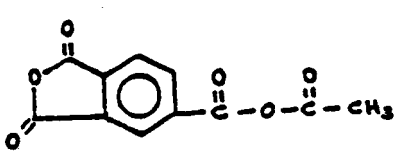
243 This subclass is indented under subclass 240. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) or nitrogen is bonded directly to the bicyclo ring system.

(1) Note. Examples of compounds provided for herein are:



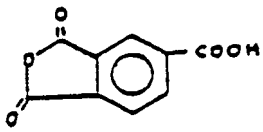
244 This subclass is indented under subclass 240. Compounds wherein a -- group, in which X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium), is bonded directly to the bicyclo ring system.

(1) Note. An example of a compound provided for herein is:



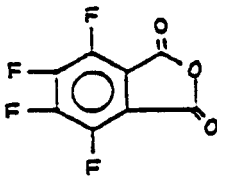
245 This subclass is indented under subclass 244. Compounds in which the -- is part of a --XH group, wherein the X's are the same or diverse chalcogens (i.e., oxygen, sulfur, selenium or tellurium); and wherein H of -XH may be replaced by a substituted or unsubstituted ammonium ion or a Group IA or IIA light metal.

(1) Note. An example of a compound provided for herein is:

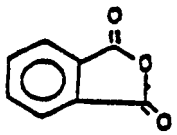


246 This subclass is indented under subclass 240. Compounds wherein halogen is bonded directly to the bicyclo ring system.

(1) Note. An example of a compound provided for herein is:



247 This subclass is indented under subclass 240. The compound which has the following structural formula:



248 This subclass is indented under subclass 247. Processes for the preparation of phthalic anhydride, per se, by an oxidation reaction.

(1) Note. Examples of processes provided for herein are the oxidation of naphthalene or of orthoxylene to phthalic anhydride.

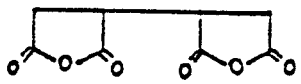
249 This subclass is indented under subclass 248. Processes wherein a catalyst, which is fluidized by passing gaseous reactants through it, is employed.

250 This subclass is indented under subclass 247. Processes wherein the phthalic anhydride is separated from impurities or from the reaction medium.

251 This subclass is indented under subclass 250. Processes which include the step of subjecting impurities contaminating phathalic anhydride to chemical reaction.

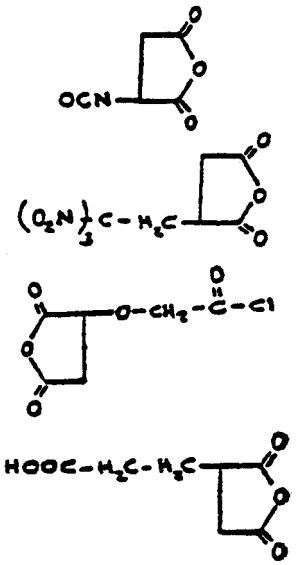
252 This subclass is indented under subclass 233. Compounds which contain the cyclic anhydride and at least one additional hetero ring which may also be a cyclic anhydride ring.

(1) Note. An example of a compound provided for herein is:



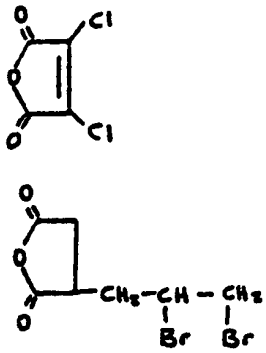
253 This subclass is indented under subclass 233. Compounds wherein nitrogen or additional chalcogen (i.e., oxygen, sulfur, selenium or tellurium) is attached directly or indirectly to the cyclic anhydride by nonionic bonding.

(1) Note. Examples of compounds provided for herein are:



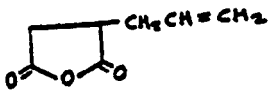
254 This subclass is indented under subclass 233. Compounds wherein halogen is attached directly or indirectly to the cyclic anhydride by nonionic bonding.

(1) Note. Examples of compounds provided for herein are:



255 This subclass is indented under subclass 233. Compounds wherein an acyclic carbon chain that contains an olefinic or acetylenic linkage is bonded directly to the cyclic anhydride ring.

(1) Note. An example of a compound provided for herein is:



256 This subclass is indented under subclass 233. Processes wherein a five-membered cyclic anhydride is prepared by an oxidation reaction.

(1) Note. Among the processes provided for herein are: oxidation of crotonaldehyde to meleic anhydride, oxidation of furfural to maleic anhydride, and oxidation of mesityl oxide to citraconic anhydride.

257 This subclass is indented under subclass 256. Processes wherein the oxidation reaction is performed on benzene or on a hydrocarbon that contains the benzene ring.

(1) Note. Examples of processes provided for herein are: oxidation of benzene to maleic anhydride and oxidation of biphenyl to phenyl maleic anhydride.

258 This subclass is indented under subclass 256. Processes wherein the oxidation reaction is performed on an acyclic or alicyclic hydrocarbon.

(1) Note. Examples of processes provided for herein are: oxidation of butane to maleic anhydride, oxidation of butene to maleic anhydride, and oxidation of isoprene to citraconic acid anhydride.

259 This subclass is indented under subclass 258. Processes wherein vanadium and phosphorus, in compound or elemental form, are utilized.

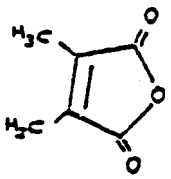
(1) Note. The vanadium and phosphorus may both be part of a single compound; they may each be components of individual compounds; one or both may be in elemental form; in sum, vanadium and phosphorus may be utilized in any possible manner.

260 This subclass is indented under subclass 259. Processes wherein, in addition to vanadium and phosphorous, a further heavy metal, other than titanium, is utilized.

(1) Note. Titanium, if utilized alone, does not satisfy the requirement of this subclass for an additional heavy metal, whereas the combination of titanium with an additional heavy metal does satisfy the requirement.

261 This subclass is indented under subclass 233. Compounds wherein the five-membered cyclic anhydride has a double bond between two of its ring members.

(1) Note. An example of a compound provided for herein is:

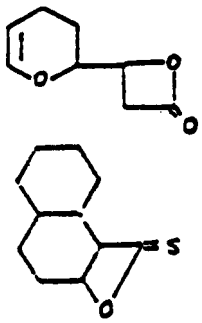


262 This subclass is indented under subclass 261. The compound which has the following structural formula:

(1) Note. Examples of concepts provided for herein are: synthesis of maleic anhydride from maleic acid, and purification and separation of maleic anhydride.

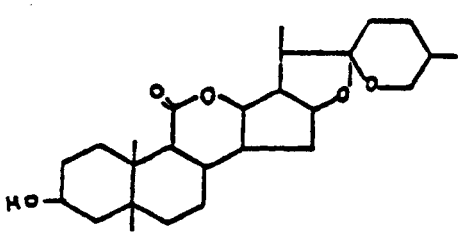
263 This subclass is indented under subclass 200. Compounds wherein the hetero ring is a lactone, i.e., a cyclic inner ester, wherein --O- is part of the ring, X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium).

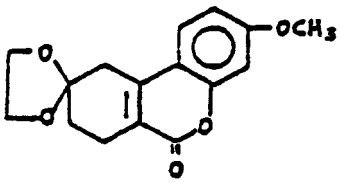
(1) Note. Examples of compounds provided for herein are:



264 This subclass is indented under subclass 263. Compounds which contain a spiro ring system.

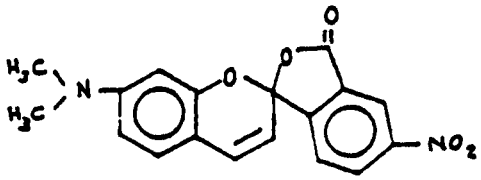
(1) Note. Examples of compounds provided for herein are:

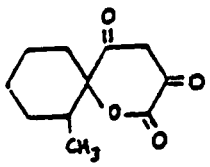




265 This subclass is indented under subclass 264. Compounds wherein at least one of the rings included in the spiro ring system is a lactone ring.

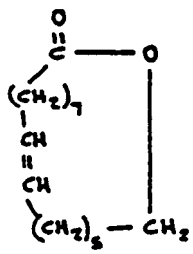
(1) Note. Examples of compounds provided for herein are:





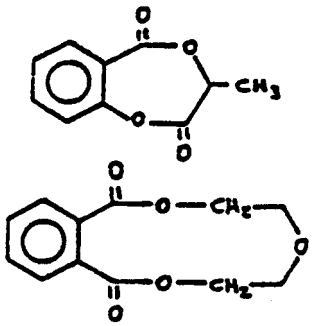
266 This subclass is indented under subclass 263. Compounds in which the lactone ring has seven or more ring members.

(1) Note. Examples of compounds provided for herein are:



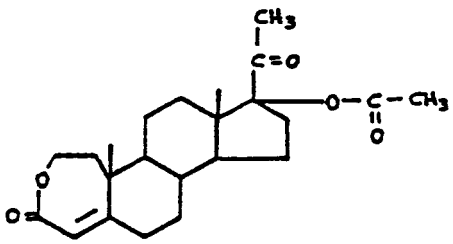
267 This subclass is indented under subclass 266. Compounds in which the lactone ring contains two or more ring oxygens.

(1) Note. Examples of compounds provided for herein are:



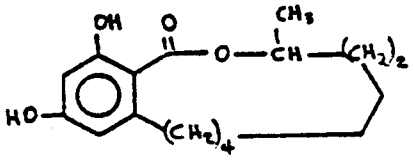
268 This subclass is indented under subclass 266. Compounds wherein the lactone ring having at least seven members is a cyclo in a polycyclo ring system.

(1) Note. An example of a compound provided for herein is:



269 This subclass is indented under subclass 268. Compounds wherein the polycyclo ring system consists of exactly two rings.

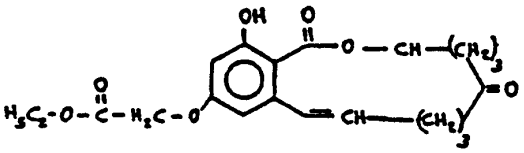
(1) Note. An example of a compound provided for herein is:



270 This subclass is indented under subclass 269. Compounds wherein an additional acyclic chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to the lactone ring.

(1) Note. Compounds classified herein have at least two acyclic chalcogens bonded directly to the lactone ring, one of which is the chalcogen of the lactone group which is double bonded directly to the ring.

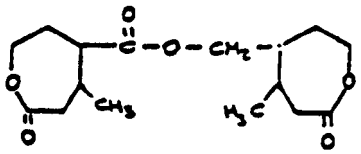
(2) Note. An example of a compound provided for herein is:

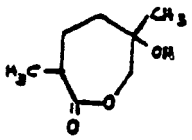


271 This subclass is indented under subclass 266. Compounds wherein an additional chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly or indirectly to the lactone ring by nonionic bonding.

(1) Note. Compounds classified herein have at least two chalcogens bonded directly or indirectly to the lactone ring, one of which is the chalcogen of the lactone group which is double bonded directly to the ring.

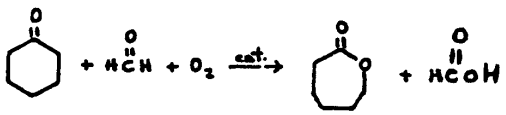
(2) Note. Examples of compounds provided for herein are:



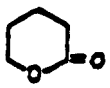


272 This subclass is indented under subclass 266. Processes wherein the compound containing the lactone ring of seven or more members is prepared from a cyclic ketone, i.e., a ketone wherein the carbonyl is part of a ring.

(1) Note. An example of a process provided for herein is:

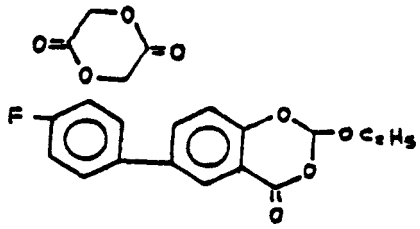


273 This subclass is indented under subclass 263. Compounds in which the lactone has six ring members, having the following basic structure, which may contain double bonds between ring members.



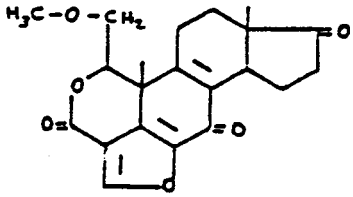
274 This subclass is indented under subclass 273. Compounds in which the lactone ring contains two or more ring oxygens.

(1) Note. Examples of compounds provided for herein are:



275 This subclass is indented under subclass 273. Compounds wherein the six-membered lactone ring is one of the cyclos in a polycyclo ring system.

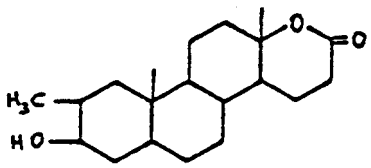
(1) Note. An example of a compound provided for herein is:



276 This subclass is indented under subclass 275. Compounds wherein the polycyclo ring system consists of exactly four rings.

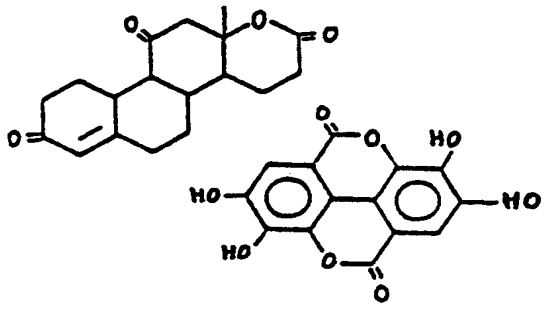
277 This subclass is indented under subclass 276. Compounds wherein the tetracyclo ring system consists of four six-membered rings.

(1) Note. An example of a compound provided for herein is:



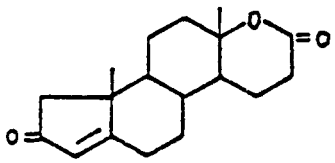
278 This subclass is indented under subclass 277. Compounds in which two or more additional chalcogens (i.e., oxygen, sulfur, selenium, or tellurium) are bonded directly to the tetracyclo ring system.

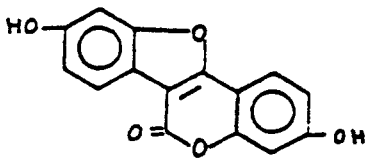
(1) Note. Examples of compounds provided for herein are:



279 This subclass is indented under subclass 276. Compounds wherein the tetracyclo ring system contains a ring oxygen bonded directly to a ring carbon, which carbon is a member of two of the cyclos in the tetracyclo ring system.

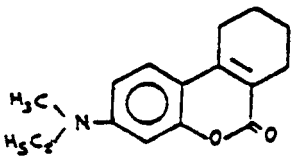
(1) Note. Examples of compounds provided for herein are:

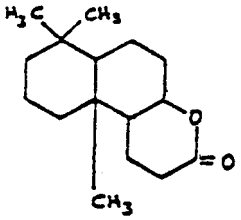




280 This subclass is indented under subclass 275. Compounds wherein the polycyclo ring system consists of exactly three rings.

(1) Note. Examples of compounds provided for herein are:

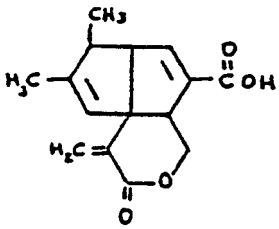


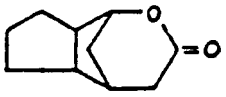


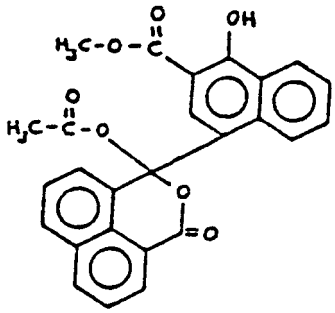
281 This subclass is indented under subclass 280. Compounds wherein (1) at least three ring members of one cyclo are ring members of an additional cyclo in the tricyclo ring system, or (2) a ring carbon is a member of each of the cyclos of the tricyclo ring system.

(1) Note. This subclass provides for bridged and peri-fused ring systems.

(2) Note. Examples of compounds provided for herein are:

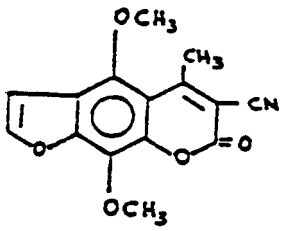


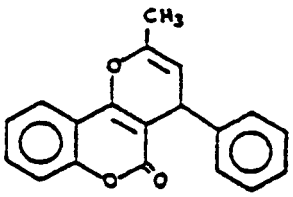




282 This subclass is indented under subclass 280. Compounds wherein the tricyclo ring system contains at least one ring oxygen in addition to the ring oxygen of the six-membered hetero ring.

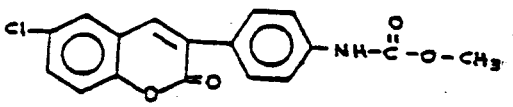
(1) Note. Examples of compounds provided for herein are:

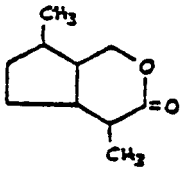




283 This subclass is indented under subclass 275. Compounds wherein the polycyclo ring system consists of exactly two rings.

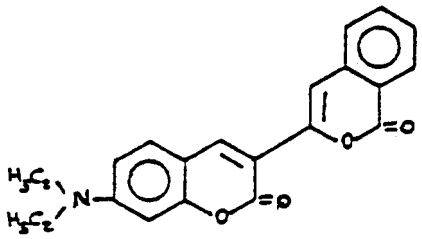
(1) Note. Examples of compounds provided for herein are:





284 This subclass is indented under subclass 283. Compounds which contain at least two bicyclo ring systems each of which contains a six-membered lactone as one of its cyclos.

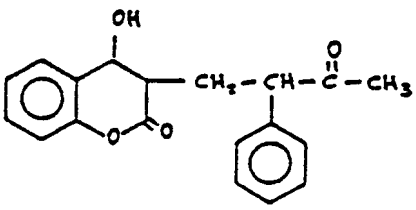
(1) Note. An example of a compound provided for herein is:



285 This subclass is indented under subclass 283. Compounds wherein an additional acyclic chalcogen is bonded directly to the six-membered lactone ring.

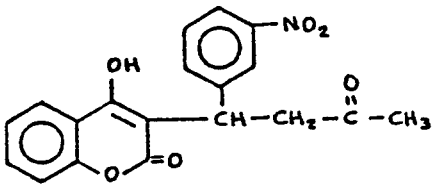
(1) Note. Compounds classified herein have at least two acyclic chalcogens bonded directly to the lactone ring, one of which is the chalcogen of the lactone group which is double bonded directly to the ring.

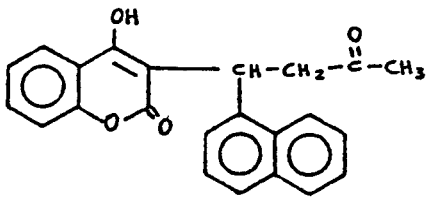
(2) Note. An example of a compound provided for herein is:



286 This subclass is indented under subclass 285. Compounds wherein a benzene ring and the six-membered lactone ring are both bonded directly to the same acyclic carbon.

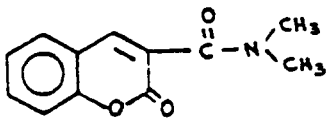
(1) Note. Examples of compounds provided for herein are:





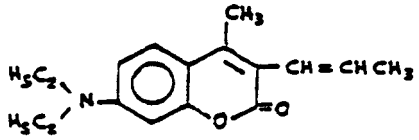
287 This subclass is indented under subclass 283. Compounds in which an acyclic -- group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium), is bonded directly to the lactone ring.

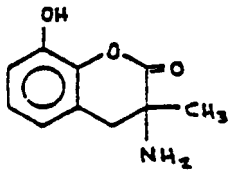
(1) Note. An example of a compound provided for herein is:



288 This subclass is indented under subclass 283. Compounds in which nitrogen is bonded directly to the bicyclo ring system.

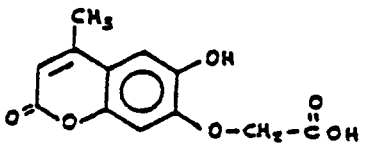
(1) Note. Examples of compounds provided for herein are:

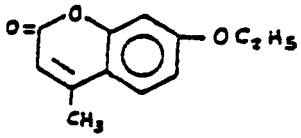




289 This subclass is indented under subclass 283. Compounds wherein the other cyclo of the bicyclo ring system is a six-membered carbocyclic ring which has chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) bonded directly to it.

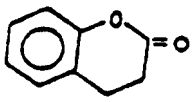
(1) Note. Examples of compounds provided for herein are:

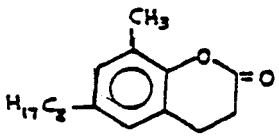




290 This subclass is indented under subclass 283. Compounds in which the bicyclo ring system consists of the six-membered lactone and an additional six-membered ring; said bycyclic lactone is either unsubstituted or substituted by hydrocarbon groups only.

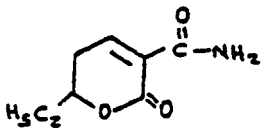
(1) Note. Examples of compounds provided for herein are:

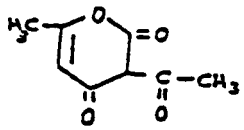




291 This subclass is indented under subclass 273. Compounds in which an acyclic -- group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium), is bonded directly to the lactone ring.

(1) Note. Examples of compounds provided for herein are:

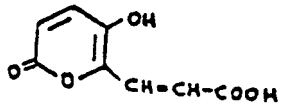




292 This subclass is indented under subclass 273. Compounds wherein an additional chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to the lactone ring.

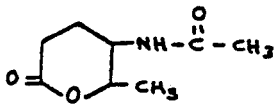
(1) Note. Compounds classified herein have at least two acyclic chalcogens bonded directly to the oxygen-containing hetero ring, one of which is the chalcogen of the lactone group which is double bonded directly to the ring.

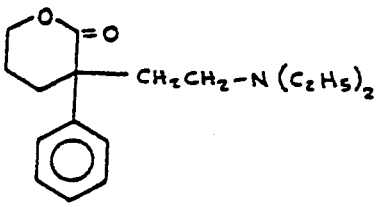
(2) Note. An example of a compound provided for herein is:



293 This subclass is indented under subclass 273. Compounds in which nitrogen is attached directly or indirectly to lactone ring by non-ionic bonding.

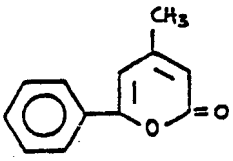
(1) Note. Examples of compounds provided for herein are:





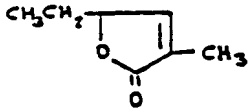
294 This subclass is indented under subclass 273. Compounds in which there is at least one double bond between ring members of the lactone ring.

(1) Note. An example of a compound provided for herein is:



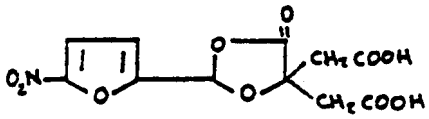
295 This subclass is indented under subclass 263. Compounds wherein the lactone has five members.

(1) Note. An example of a compound provided for herein is:



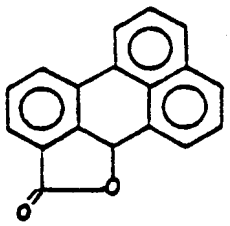
296 This subclass is indented under subclass 295. Compounds wherein the five-membered lactone ring contains at least two ring oxygens.

(1) Note. An example of a compound provided for herein is:



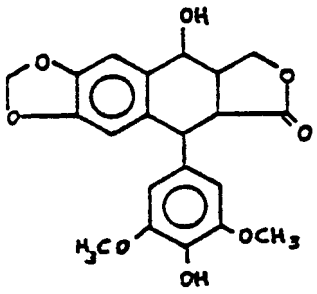
297 This subclass is indented under subclass 295. Compounds wherein the five-membered lactone is one of the cyclos of a polycyclo ring system.

(1) Note. An example of a compound provided for herein is:



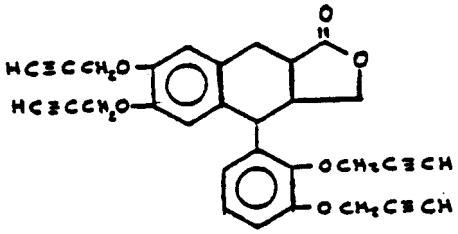
298 This subclass is indented under subclass 297. Compounds wherein the polycyclo ring system consists of exactly four rings.

(1) Note. An example of a compound provided for herein is:



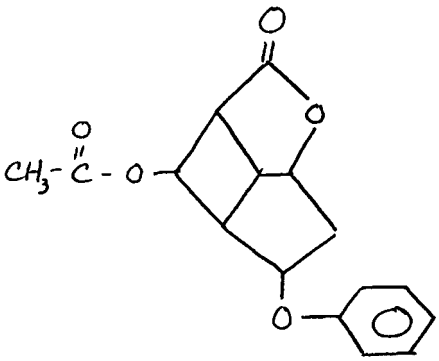
299 This subclass is indented under subclass 297. Compounds wherein the polycyclo ring system consists of exactly three cyclos.

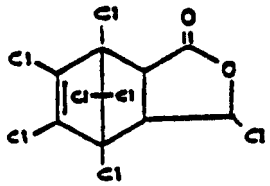
(1) Note. An example of a compound provided for herein is:



300 This subclass is indented under subclass 299. Compounds wherein (1) at least three ring members of one cyclo are ring members of an additional cyclo in the tricyclo ring system, or (2) one ring carbon is a member of each of the cyclos of the tricyclo ring system.

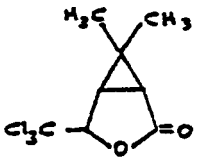
(1) Note. Examples of compounds provided for herein are:





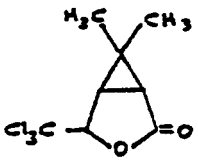
301 This subclass is indented under subclass 299. Compounds wherein the tricyclo ring system consists of the five-membered lactone ring, a five-membered carbocyclic ring and a three-membered carbocyclic ring.

(1) Note. An example of a compound provided for herein is:



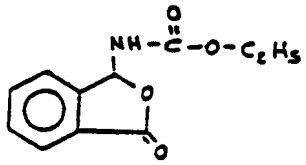
302 This subclass is indented under subclass 297. Compounds wherein the polycyclo ring system consists of exactly two rings.

(1) Note. An example of a compound provided for herein is:



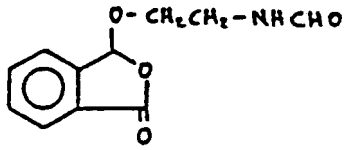
303 This subclass is indented under subclass 302. Compounds wherein nitrogen is bonded directly to the lactone ring of the bicyclo ring system.

(1) Note. An example of a compound provided for herein is:



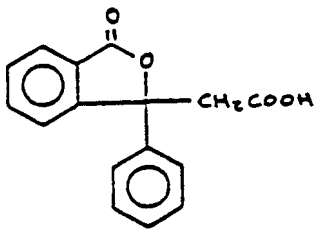
304 This subclass is indented under subclass 302. Compounds wherein nitrogen is attached indirectly to the lactone ring of the bicyclo ring system by acyclic nonionic bonding.

(1) Note. An example of a compound provided for herein is:



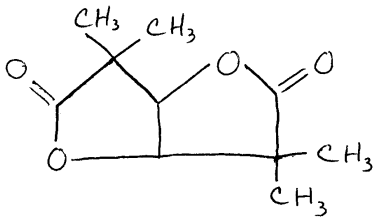
305 This subclass is indented under subclass 302. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the lactone ring of the bicyclo ring system by acyclic nonionic bonding.

(1) Note. An example of a compound provided for herein is:



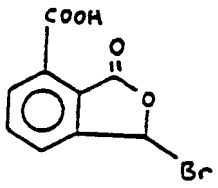
306 This subclass is indented under subclass 302. Compounds wherein the bicyclo ring system contains at least two ring oxygens.

(1) Note. An example of a compound provided for herein is:



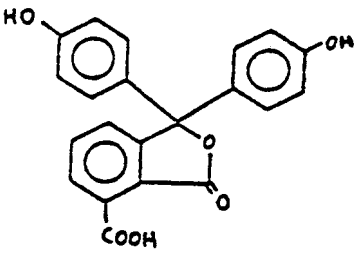
307 This subclass is indented under subclass 302. Compounds wherein the bicyclo ring system consists of the five-membered lactone ring and a benzene ring.

(1) Note. An example of a compound provided for herein is:



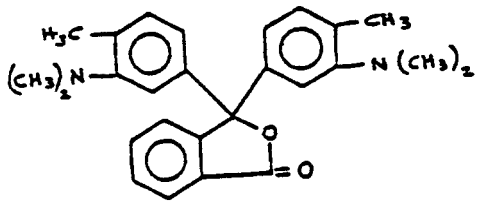
308 This subclass is indented under subclass 307. Compounds wherein two carbocyclic rings are bonded directly to the same ring atom of the lactone ring of the bicyclo ring system.

(1) Note. An example of a compound provided for herein is:



309 This subclass is indented under subclass 308. Compounds wherein nitrogen is bonded directly to each of the carbocyclic rings.

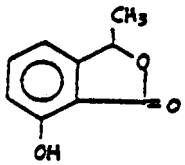
(1) Note. An example of a compound provided herein is:

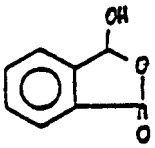


310 This subclass is indented under subclass 307. Compounds wherein an additional chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to the bicyclo ring system.

(1) Note. The chalcogen required by this subclass is in addition to the double bonded oxygen of the -C-O- grouping of the lactone ring.

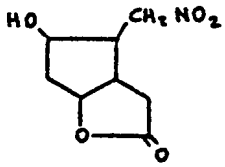
(2) Note. Examples of compounds provided for herein are:





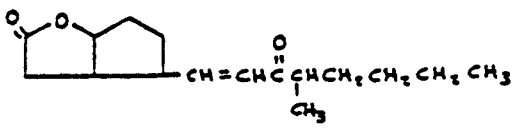
311 This subclass is indented under subclass 302. Compounds wherein the bicyclo ring system consists of the five-membered lactone ring and another five-membered ring.

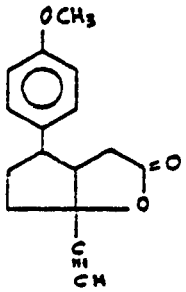
(1) Note. An example of a compound provided for herein is:



312 This subclass is indented under subclass 311. Compounds wherein an acyclic carbon chain containing carbon to carbon unsaturation is attached directly or indirectly to the lactone ring by nonionic bonding.

(1) Note. Examples of compounds provided for herein are:

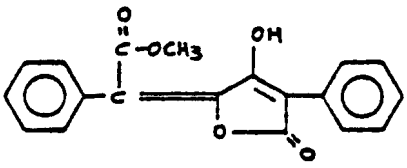




313 This subclass is indented under subclass 295. Compounds wherein an additional chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to the lactone ring.

(1) Note. The chalcogen required by this subclass is in addition to the double bonded oxygen of the --O- grouping of the lactone ring.

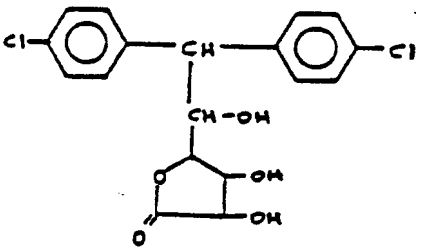
(2) Note. An example of a compound provided for herein is:



314 This subclass is indented under subclass 313. Compounds wherein two or more additional chalcogens (i.e., oxygen, sulfur, selenium, or tellurium) are bonded directly to the lactone ring.

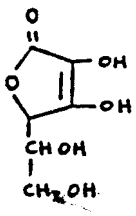
(1) Note. Compounds classified herein have at least three acyclic chalcogens bonded directly to the oxygen- containing hetero ring, one of which is the chalcogen of the lactone group which is double bonded directly to the ring.

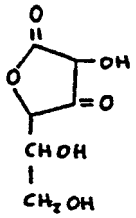
(2) Note. An example of a compound provided for herein is:



315 This subclass is indented under subclass 314. Compounds wherein there is a double bond between ring members of the lactone ring, or chalcogen (i,e., oxygen, sulfur, selenium, or tellurium) is double bonded directly at the 3- or 4- position of the lactone ring.

(1) Note. Example of compounds provided for herein are:

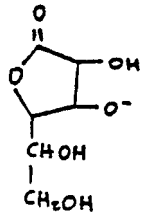


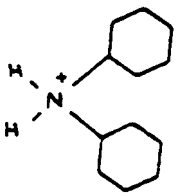


(2) Note. The two compounds of (1) Note, supra, are related by keto-enol tautomerism.

316 This subclass is indented under subclass 315. Compounds which are amine addition salts.

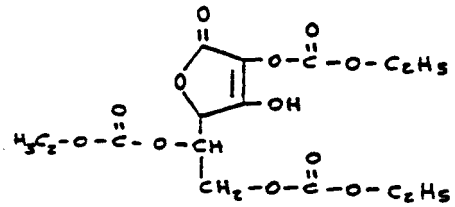
(1) Note. An example of a compound provided for herein is:

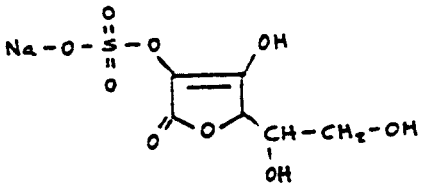




317 This subclass is indented under subclass 315. Compounds in which sulfur or a -- group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium), is bonded directly to a cyclic chalcogen.

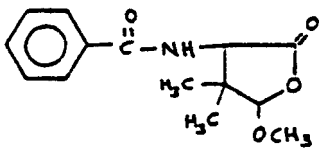
(1) Note. Examples of compounds provided for herein are:

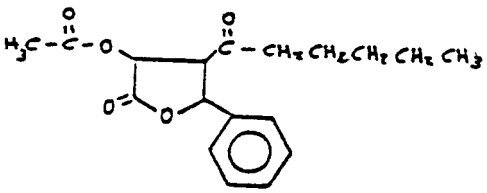




318 This subclass is indented under subclass 313. Compounds wherein an acyclic -- group, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), is attached directly or indirectly to the lactone ring by nonionic bonding.

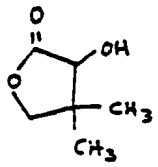
(1) Note. Examples of compounds provided for herein are:





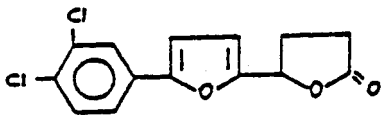
319 This subclass is indented under subclass 313. Compounds wherein plural alkyl groups are bonded directly to the same ring carbon of the lactone ring.

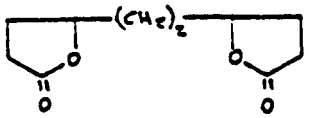
(1) Note. An example of a compound provided for herein is:



320 This subclass is indented under subclass 295. Compounds which contain the five-membered lactone ring and at least one additional hetero ring, which may also be a five-membered lactone ring.

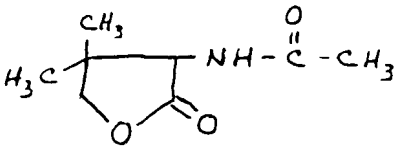
(1) Note. Examples of compounds provided for herein are:

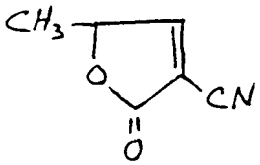




321 This subclass is indented under subclass 295. Compounds wherein nitrogen is attached directly or indirectly to the lactone ring by nonionic bonding.

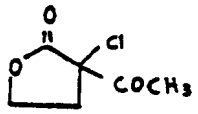
(1) Note. Examples of compounds provided for herein are:





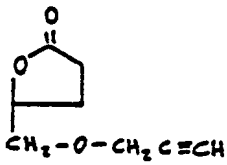
322 This subclass is indented under subclass 295. Compounds wherein a -- group, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), is bonded directly to the lactone ring.

(1) Note. An example of a compound provided for herein is:



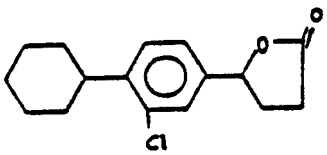
323 This subclass is indented under subclass 295. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the lactone ring by nonionic bonding.

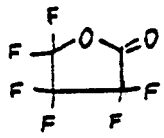
(1) Note. An example of a compound provided for herein is:



324 This subclass is indented under subclass 295. Compounds wherein halogen is attached directly or indirectly to the lactone ring by nonionic bonding.

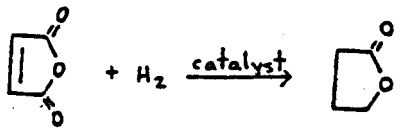
(1) Note. Examples of compounds provided for herein are:





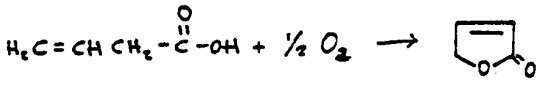
325 This subclass is indented under subclass 295. Processes wherein the lactone ring is prepared by hydrogenation of a cyclic anhydride.

(1) Note. An example of a process provided for herein is:

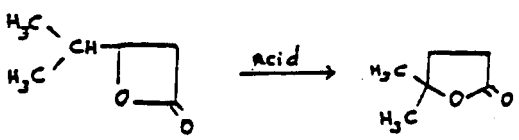


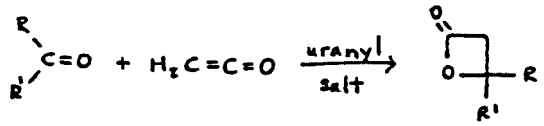
326 This subclass is indented under subclass 295. Processes wherein the lactone ring is prepared from a compound containing the --O- group.

(1) Note. An example of a process provided for herein is:



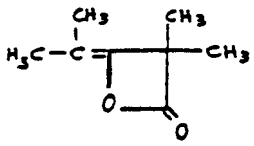
(2) Note.The reactant containing the --O- group may be a lactone itself, which is converted into a five-membered lactone ring; for example:





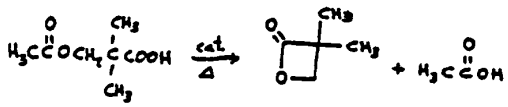
327 This subclass is indented under subclass 263. Compounds in which acyclic carbon is double bonded directly to a ring carbon of a four-membered lactone ring.

(1) Note. An example of a compound provided for herein is:



328 This subclass is indented under subclass 263. Processes whereby a four-membered lactone ring is formed.

(1) Note. An example of a process provided for herein is:



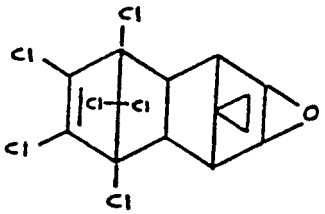
329 This subclass is indented under subclass 328. Processes whereby the four-membered lactone ring is formed from a ketene.

(1) Note. Ketene is represented by the structure HCH=C=O, wherein -H may be substituted.

(2) Note. An example of a process provided for herein is:

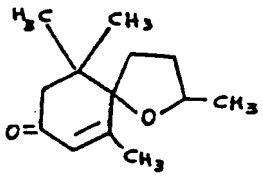
330 This subclass is indented under subclass 200. Compounds which contain a spiro ring system.

(1) Note. An example of a compound provided for herein is:



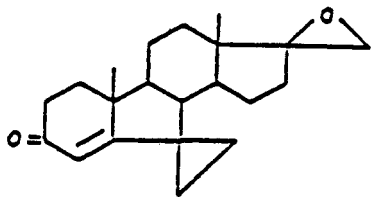
331 This subclass is indented under subclass 330. Compounds wherein at least one of the rings in the spiro ring system is an oxygen containing hetero ring.

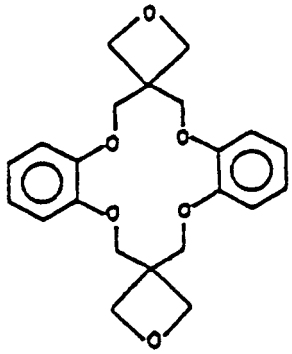
(1) Note. An example of a compound provided for herein is:



332 This subclass is indented under subclass 331. Compounds wherein at least one of the rings in the spiro ring system is a three- or four-membered oxygen containing hetero ring.

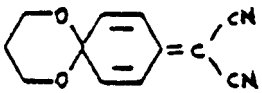
(1) Note. Examples of compounds provided for herein are:





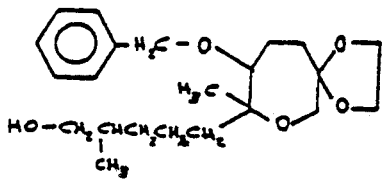
333 This subclass is indented under subclass 331. Compounds wherein at least one of the rings in the spiro ring system contains two or more ring oxygens.

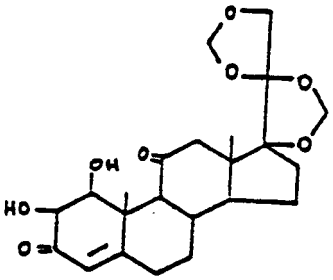
(1) Note. An example of a compound provided for herein is:



334 This subclass is indented under subclass 333. Compounds wherein both of the rings in the spiro ring system are oxygen containing hetero rings.

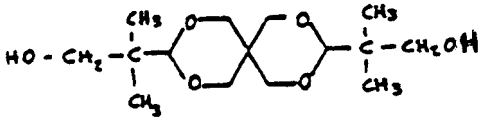
(1) Note. Examples of compounds provided for herein are:





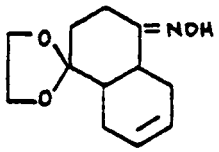
335 This subclass is indented under subclass 334. Compounds wherein both of the hetero rings in the spiro ring system are six-membered rings, each containing at least two ring oxygens.

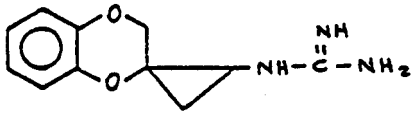
(1) Note. An example of a compound provided for herein is:



336 This subclass is indented under subclass 333. Compounds wherein one of the two rings which form the spiro ring system is additionally one of the cyclos of a polycyclo ring system.

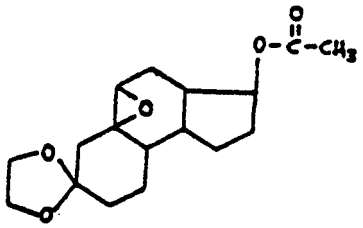
(1) Note. Examples of compounds provided for herein are:

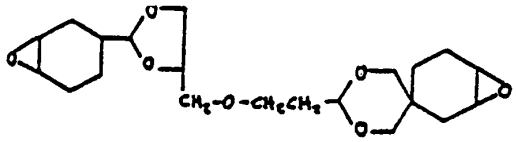




337 This subclass is indented under subclass 336. Compounds which contain an additional oxygen containing hetero ring.

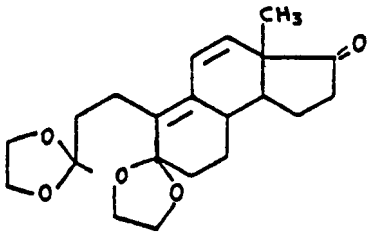
(1) Note. Examples of compounds provided for herein are:





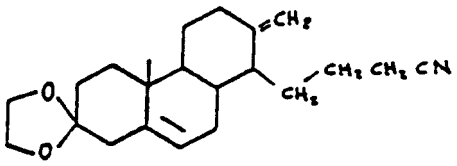
338 This subclass is indented under subclass 337. Compounds which contain at least two five-membered oxygen containing hetero rings.

(1) Note. An example of a compound provided for herein is:



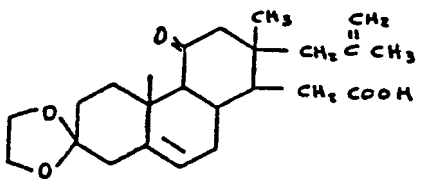
339 This subclass is indented under subclass 336. Compounds wherein one of the two rings which form the spiro ring system is additionally one of the cyclos of a tricyclo-carbocyclic ring system.

(1) Note. An example of a compound provided for herein is:



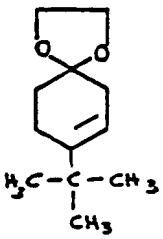
340 This subclass is indented under subclass 339. Compounds which contain an acyclic -- group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium).

(1) Note. An example of a compound provided for herein is:



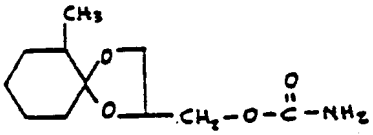
341 This subclass is indented under subclass 333. Compounds in which the spiro hetero ring is a five-membered ring.

(1) Note. An example of a compound provided for herein is:



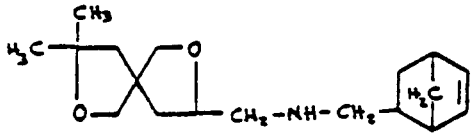
342 This subclass is indented under subclass 341. Compounds which contain an acyclic -- group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium).

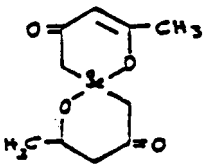
(1) Note. An example of a compound provided for herein is:



343 This subclass is indented under subclass 331. Compounds wherein both rings in the spiro ring system are oxygen containing hetero rings.

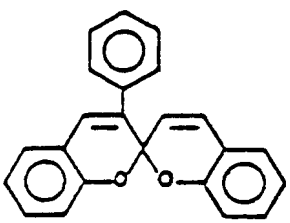
(1) Note. Examples of compounds provided for herein are:





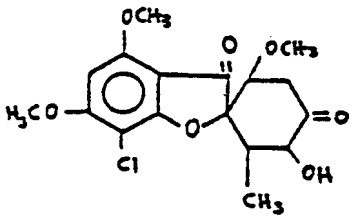
344 This subclass is indented under subclass 343. Compounds wherein one of the two oxygen containing hetero rings in the spiro ring system is additionally one of the cyclos of a polycyclo ring system.

(1) Note. An example of a compound provided for herein is:



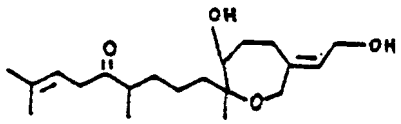
345 This subclass is indented under subclass 331. Compounds in which the spiro hetero ring is one of the cyclos in a bicyclo ring system.

(1) Note. This subclass provides for, inter alia, griseofulvin and its derivatives, e.g.,



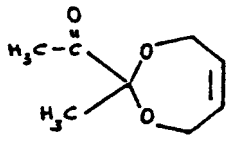
346 This subclass is indented under subclass 200. Compounds in which the oxygen containing hetero ring has seven or more ring members.

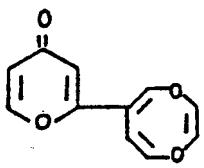
(1) Note. An example of a compound provided for herein is:



347 This subclass is indented under subclass 346. Compounds in which the hetero ring contains at least two ring oxygens.

(1) Note. Examples of compounds provided for herein are:

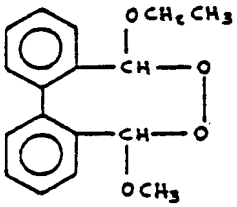




348 This subclass is indented under subclass 347. Compounds in which the hetero ring is one of the cyclos in a polycyclo ring system.

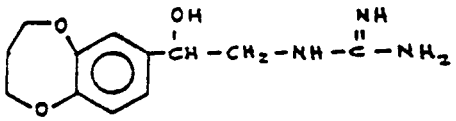
349 This subclass is indented under subclass 348. Compounds in which the polycyclo ring system consists of exactly three cyclos.

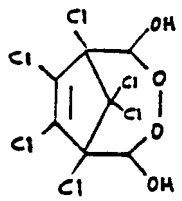
(1) Note. An example of a compound provided for herein is:



350 This subclass is indented under subclass 348. Compounds in which the polycyclo ring system consists of exactly two cyclos.

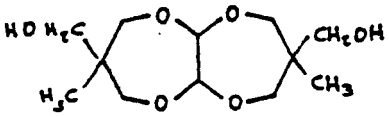
(1) Note. Examples of compounds provided for herein are:

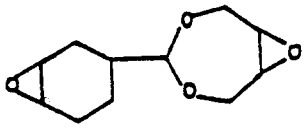


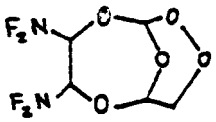


351 This subclass is indented under subclass 350. Compounds wherein the bicyclo ring system contains at least three ring oxygens.

(1) Note. Examples of compounds provided for herein are:

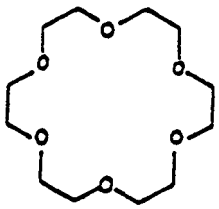


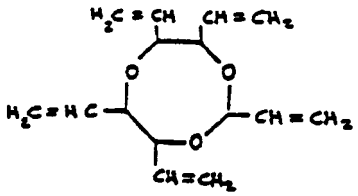




352 This subclass is indented under subclass 347. Compounds in which the hetero ring contains at least three ring oxygens.

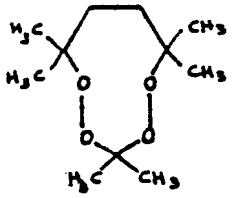
(1) Note. Examples of compounds provided for herein are:





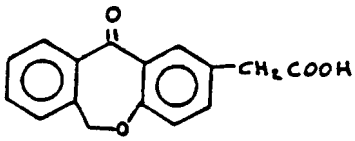
353 This subclass is indented under subclass 352. Compounds in which the hetero ring contains exactly four oxygens.

(1) Note. An example of a compound provided for herein is:



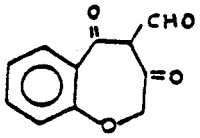
354 This subclass is indented under subclass 346. Compounds in which the hetero ring is one of the cyclos of a polycyclo ring system.

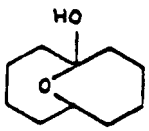
(1) Note. An example of a compound provided for herein is:



355 This subclass is indented under subclass 354. Compounds wherein the polycyclo ring system consists of exactly two rings.

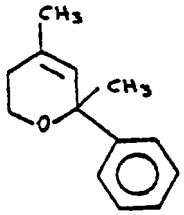
(1) Note. Examples of compounds provided for herein are:





356 This subclass is indented under subclass 200. Compounds in which the oxygen containing hetero ring has six ring members.

(1) Note. An example of a compound provided for herein is:

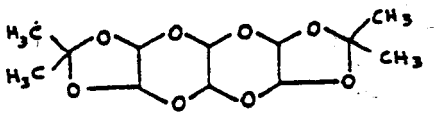


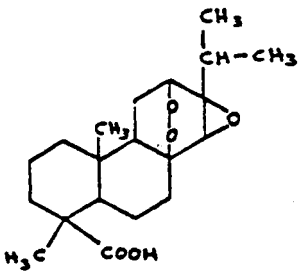
357 This subclass is indented under subclass 356. Compounds in which the hetero ring contains at least two ring oxygens.

(1) Note. An example of a compound provided for herein is:

358 This subclass is indented under subclass 357. Compounds wherein the hetero ring is one of the cyclos in a polycyclo ring system.

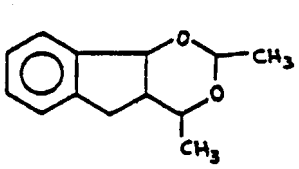
(1) Note. Examples of compounds provided for herein are:





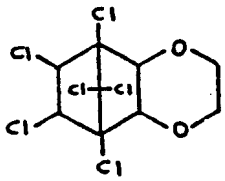
359 This subclass is indented under subclass 358. Compounds in which the polycyclo ring system consists of exactly three rings.

(1) Note. An example of a compound provided for herein is:



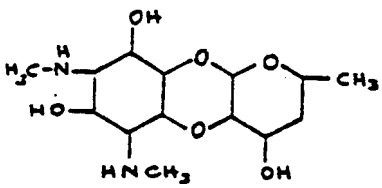
360 This subclass is indented under subclass 359. Compounds wherein at least three ring members of one cyclo are ring members of an additional cyclo in the tricyclo ring system (i.e., bridged).

(1) Note. An example of a compound provided for herein is:



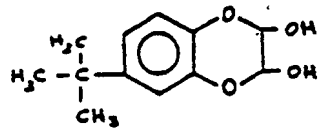
361 This subclass is indented under subclass 359. Compounds wherein the tricyclo ring system contains at least three ring oxygens.

(1) Note. An example of a compound provided for herein is:



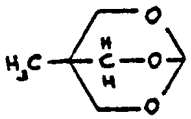
362 This subclass is indented under subclass 358. Compounds in which the polycyclo ring system consists of exactly two rings.

(1) Note. An example of a compound provided for herein is:



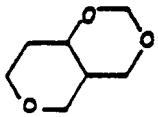
363 This subclass is indented under subclass 362. Compounds wherein at least three ring members of one cyclo are ring members of the other cyclo in the bicyclo ring system (i.e., bridged).

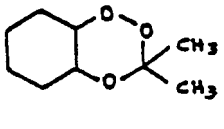
(1) Note. An example of a compound provided for herein is:



364 This subclass is indented under subclass 362. Compounds wherein the bicyclo ring system contains at least three ring oxygens.

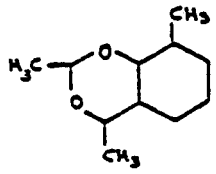
(1) Note. Examples of compounds provided for herein are:

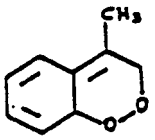




365 This subclass is indented under subclass 362. Compounds in which the hetero ring consists of two ring oxygens and four ring carbons wherein the ring oxygens are in the 1,2-positions or 1,3-positions of the hetero ring.

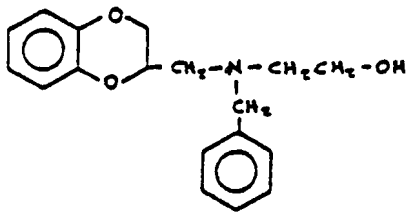
(1) Note. Examples of compounds provided for herein are:





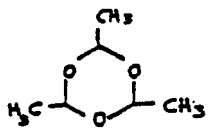
366 This subclass is indented under subclass 362. Compounds in which nitrogen is attached indirectly to the hetero ring by acyclic nonionic bonding.

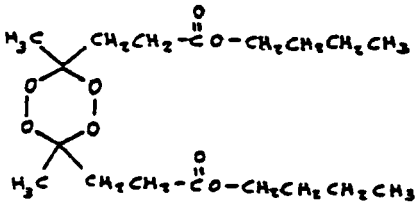
(1) Note. An example of a compound provided for herein is:



367 This subclass is indented under subclass 357. Compounds in which the hetero ring contains at least three ring oxygens.

(1) Note. Examples of compounds provided for herein are:



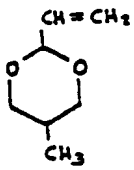


368 This subclass is indented under subclass 367. The compound which has the following structure:

(1) Note. This subclass provides for trioxane, per se, and processes for the production, purification, separation, etc., of trioxane.

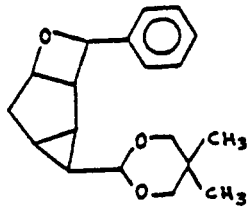
369 This subclass is indented under subclass 357. Compounds in which the hetero ring consists of two ring oxygens and four ring carbons wherein the ring oxygens are in the 1,3-positions of the hetero ring.

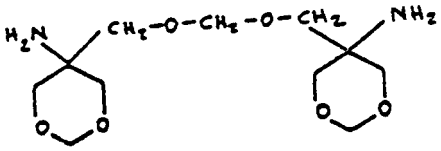
(1) Note. An example of a compound provided for herein is:



370 This subclass is indented under subclass 369. Compounds which contain an additional oxygen containing hetero ring.

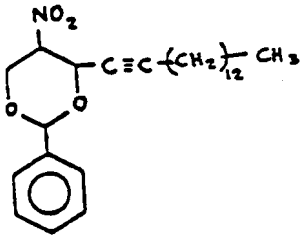
(1) Note. Examples of compounds provided for herein are:





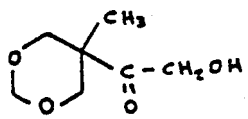
371 This subclass is indented under subclass 369. Compounds in which nitrogen is bonded directly to the hetero ring.

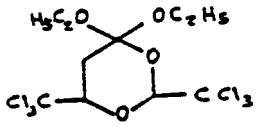
(1) Note. An example of a compound provided for herein is:



372 This subclass is indented under subclass 369. Compounds in which chalcogen (i.e., sulfur selenium, or tellurium) or a -- group, wherein X is chalcogen, is bonded directly to the hetero ring.

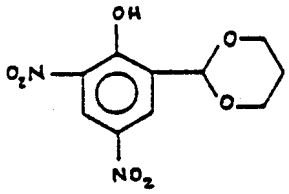
(1) Note. Examples of compounds provided for herein are:





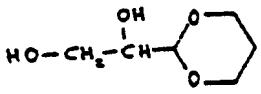
373 This subclass is indented under subclass 369. Compounds in which nitrogen is attached indirectly to the hetero ring by nonionic bonding.

(1) Note. An example of a compound provided for herein is:



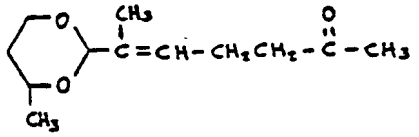
374 This subclass is indented under subclass 369. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the hetero ring by nonionic bonding.

(1) Note. An example of a compound provided for herein is:



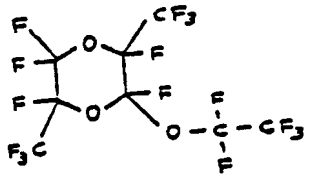
375 This subclass is indented under subclass 374. Compounds wherein the chalcogen, X, is in a -C- group.

(1) Note. An example of a compound provided for herein is:



376 This subclass is indented under subclass 369. Processes in which an aldehyde is reacted with a compound containing acyclic carbon to carbon unsaturation to prepare a 1,3-dioxane compound.

(1) Note. This subclass provides for processes such as the preparation of 4,4-dimethyl-1,3-dioxane from isobutylene and formaldehyde, etc.

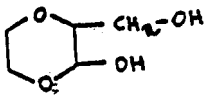


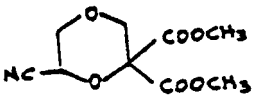
377 This subclass is indented under subclass 357. Compounds in which the hetero ring consists of two ring oxygens and four ring carbons wherein the ring oxygens are in the 1,4-positions of the hetero ring.

(1) Note. An example of a compound provided for herein is:

378 This subclass is indented under subclass 377. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly or indirectly to the hetero ring by non-ionic bonding.

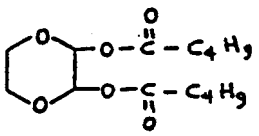
(1) Note. Examples of compounds provided for herein are:





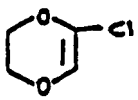
379 This subclass is indented under subclass 378. Compounds in which at least two chalcogens (i.e., oxygen, sulfur, selenium, or tellurium) are bonded directly to the hetero ring.

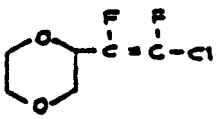
(1) Note. An example of a compound provided for herein is:



380 This subclass is indented under subclass 377. Compounds in which halogen is attached directly or indirectly to the hetero ring by non-ionic bonding.

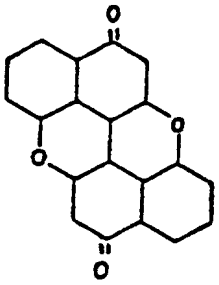
(1) Note. Examples of compounds provided for herein are:





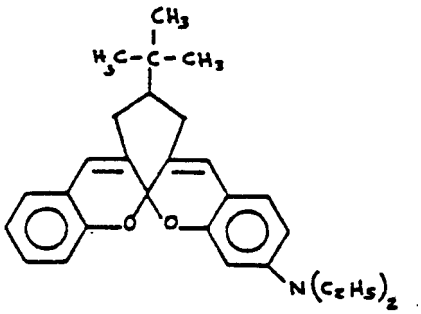
381 This subclass is indented under subclass 356. Compounds in which the hetero ring is one of the cyclos in a polycyclo ring system.

(1) Note. An example of a compound provided for herein is:



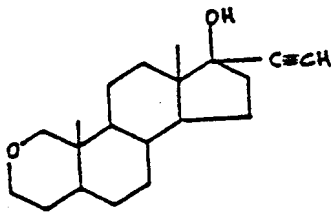
382 This subclass is indented under subclass 381. Compounds wherein the polycyclo ring system consists of exactly five rings.

(1) Note. An example of a compound provided for herein is:



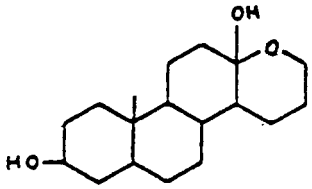
383 This subclass is indented under subclass 381. Compounds wherein the polycyclo ring system consists of exactly four rings.

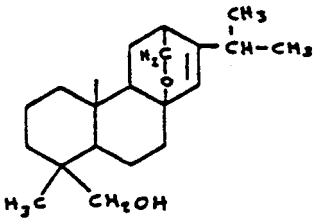
(1) Note. An example of a compound provided for herein is:



384 This subclass is indented under subclass 383. Compounds wherein the four rings of the tetracyclo ring system are each six membered.

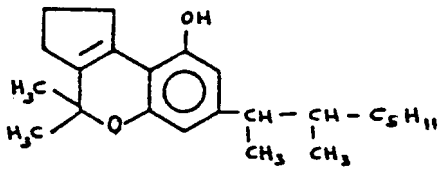
(1) Note. Examples of compounds provided for herein are:





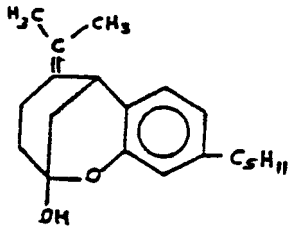
385 This subclass is indented under subclass 381. Compounds wherein the polycyclo ring system consists of exactly three rings.

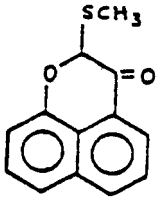
(1) Note. An example of a compound provided for herein is:



386 This subclass is indented under subclass 385. Compounds wherein (1) at least three ring members of one cyclo are ring members of an additional cyclo in the tricyclo ring system, or (2) a ring carbon is a member of each of the cyclos of the tricyclo ring system.

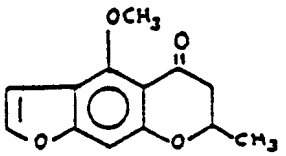
(1) Note. Examples of compounds provided for herein are:





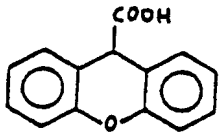
387 This subclass is indented under subclass 385. Compounds wherein the tricyclo ring system includes at least one ring oxygen in addition to the ring oxygen of the six-membered hetero ring.

(1) Note. An example of a compound provided for herein is:



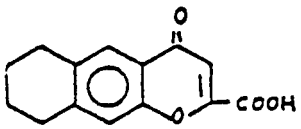
388 This subclass is indented under subclass 385. Compounds wherein the three rings of the tricyclo ring system are each six-membered.

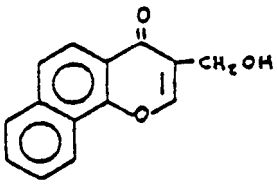
(1) Note. An example of a compound provided for herein is:



389 This subclass is indented under subclass 388. Compounds wherein the tricyclo ring system consists of a naphthalene ring system, which may be hydrogenated, sharing two adjacent carbons with the six-membered hetero ring.

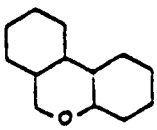
(1) Note. Examples of compounds provided for herein are:

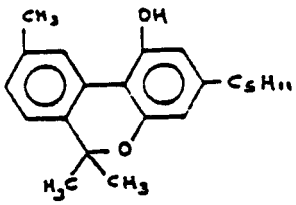




390 This subclass is indented under subclass 388. Compounds wherein the tricyclo ring system has the following basic structure which may contain double bonds between ring members.

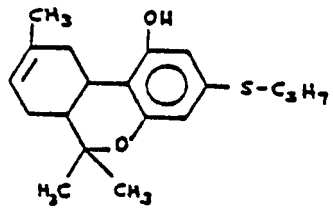
(1) Note. An example of a compound provided for herein is:

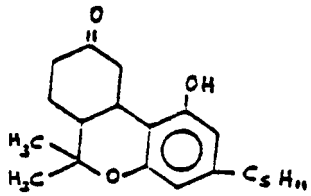




391 This subclass is indented under subclass 390. Compounds in which at least two chalcogens are bonded directly to the tricyclo ring system.

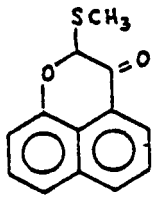
(1) Note. Examples of compounds provided for herein are:

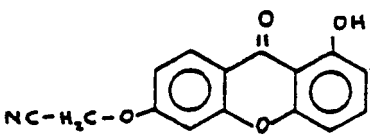




392 This subclass is indented under subclass 388. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to the hetero ring of the tricyclo ring system.

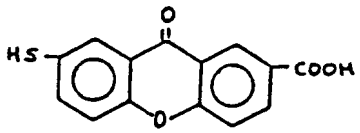
(1) Note. Examples of compounds provided for herein are:





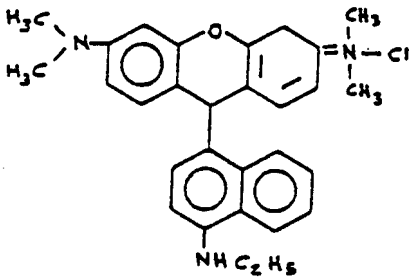
393 This subclass is indented under subclass 392. Compounds in which a -- group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium), is bonded directly to the tricyclo ring system.

(1) Note. An example of a compound provided for herein is:



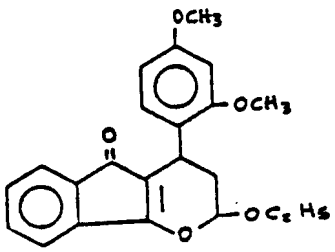
394 This subclass is indented under subclass 388. Compounds in which nitrogen is bonded directly to the tricyclo ring system.

(1) Note. An example of a compound provided for herein is:



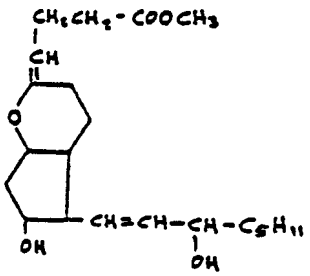
395 This subclass is indented under subclass 385. Compounds in which acyclic chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to the hetero ring of the tricyclo ring system.

(1) Note. An example of a compound provided for herein is:



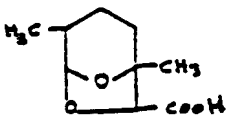
396 This subclass is indented under subclass 381. Compounds wherein the polycyclo ring system consists of exactly two rings.

(1) Note. An example of a compound provided for herein is:



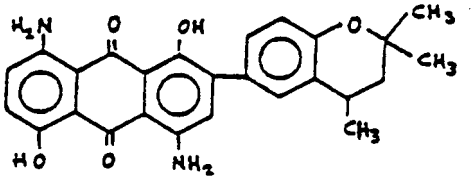
397 This subclass is indented under subclass 396. Compounds wherein at least three ring members of one cyclo are ring members of the other cyclo in the bicyclo ring system (i.e., bridged).

(1) Note. An example of a compound provided for herein is:



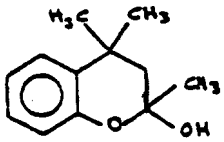
398 This subclass is indented under subclass 396. Compound in which the bicyclo ring system consists of the six-membered hetero ring and a six-member carbocyclic ring.

(1) Note. An example of a compound provided for herein is:



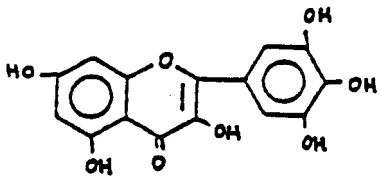
399 This subclass is indented under subclass 398. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to the hetero ring of the bicyclo ring system.

(1) Note. An example of a compound provided for herein is:



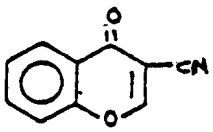
400 This subclass is indented under subclass 399. Compounds wherein at least two chalcogens are bonded directly to the hetero ring.

(1) Note. An example of a compound provided for herein is:



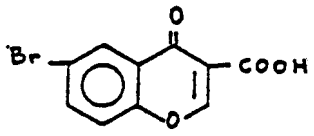
401 This subclass is indented under subclass 399. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to the ring carbon in the position which is para to the ring oxygen.

(1) Note. An example of a compound provided for herein is:



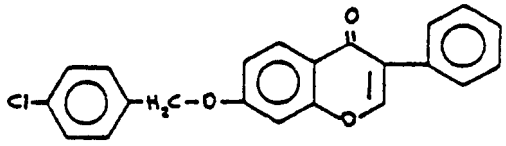
402 This subclass is indented under subclass 401. Compounds in which a -- group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium), is bonded directly to the hetero ring.

(1) Note. An example of a compound provided for herein is:



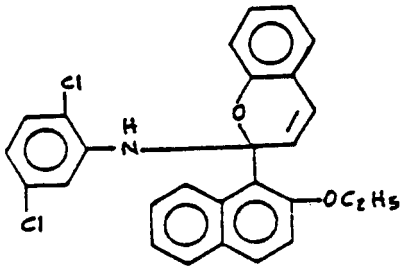
403 This subclass is indented under subclass 401. Compounds in which a benzene ring is bonded directly to the hetero ring.

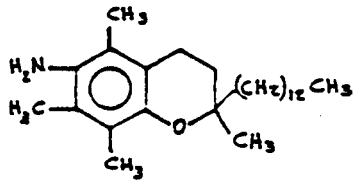
(1) Note. An example of a compound provided for herein is:



404 This subclass is indented under subclass 398. Compounds in which nitrogen is bonded directly to the bicyclo ring system.

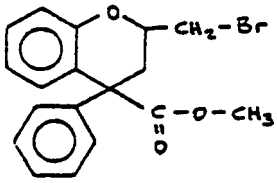
(1) Note. Examples of compounds provided for herein are:

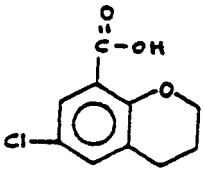




405 This subclass is indented under subclass 398. Compounds in which a -- group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium), is bonded directly to the bicyclo ring system.

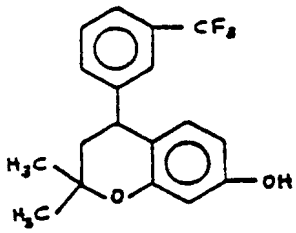
(1) Note. Examples of compounds provided for herein are:





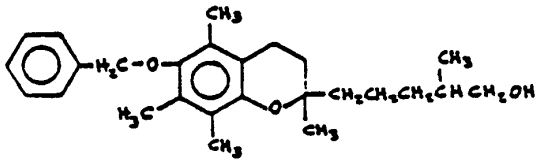
406 This subclass is indented under subclass 398. Compounds in which a carbocyclic ring is bonded directly to the hetero ring of the bicyclo ring system.

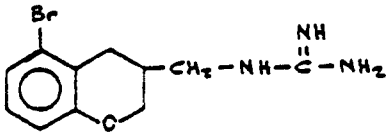
(1) Note. An example of a compound provided for herein is:



407 This subclass is indented under subclass 398. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) or nitrogen is attached indirectly to the hetero ring by acyclic nonionic bonding.

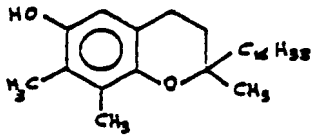
(1) Note. Examples of compounds provided for herein are:





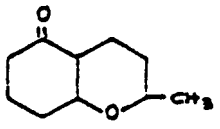
408 This subclass is indented under subclass 398. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to the carbocyclic ring of the bicyclo ring system.

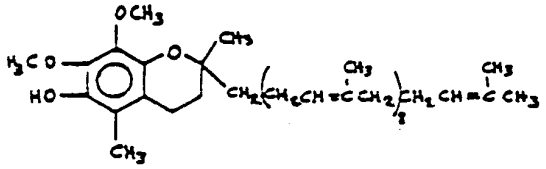
(1) Note. An example of a compound provided for herein is:



409 This subclass is indented under subclass 408. Compounds in which chalcogen is double bonded or at least two chalcogens are bonded directly to the carbocyclic ring.

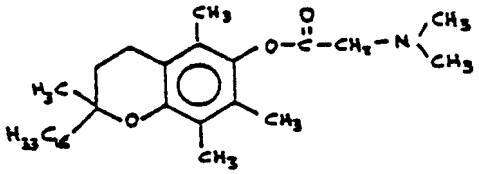
(1) Note. Examples of compounds provided for herein are:





410 This subclass is indented under subclass 408. Compound wherein the singly bonded chalogen of a --X-group, in which the X's are the same or diverse chalcogens (i.e., oxygen, sulfur, selenium or tellurium), is bonded directly to the carbocyclic ring of the bicyclo ring system.

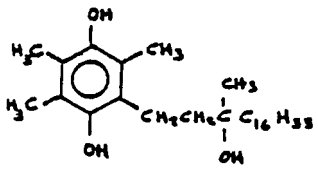
(1) Note. An example of a compound provided for herein is:

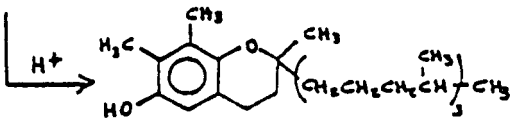


411 This subclass is indented under subclass 408. Processes wherein a 1,4-di-oxygen substituted carbocyclic ring is utilized as a reactant.

(1) Note. This subclass provides for processes utilizing l,4-benzoquinones and 1,4-dihydroxy benzene compounds, inter alia, as reactants.

(2) Note. An example of a process provided for herein is:



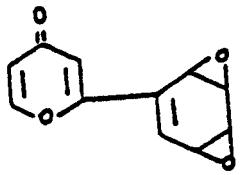


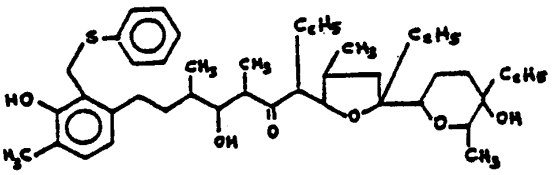
412 This subclass is indented under subclass 408. Processes whereby substituents on the carbocyclic ring of the bicyclo ring system are modified chemically.

413 This subclass is indented under subclass 408. Processes whereby the product is separated from impurities or from the reaction medium.

414 This subclass is indented under subclass 356. Compounds which contain an additional oxygen containing hetero ring.

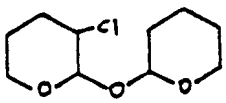
(1) Note. Examples of compounds provided for herein are:





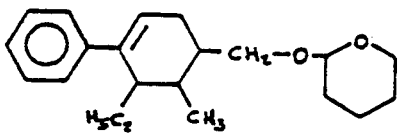
415 This subclass is indented under subclass 414. Compounds wherein the additional oxygen containing hetero ring is six-membered.

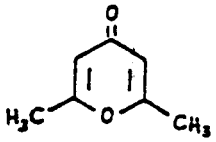
(1) Note. An example of a compound provided for herein is:



416 This subclass is indented under subclass 356. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to the hetero ring.

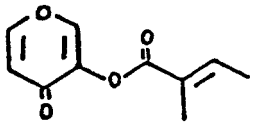
(1) Note. Examples of compounds provided for herein are:





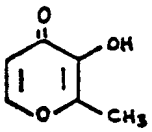
417 This subclass is indented under subclass 416. Compounds wherein at least two chalcogens are bonded directly to the hetero ring.

(1) Note. An example of a compound provided for herein is:



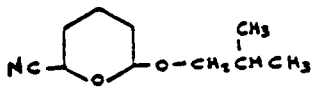
418 This subclass is indented under subclass 417. Compounds in which hydroxy is bonded directly at the 3-position and oxygen is double bonded directly at the 4-position of the hetero ring, wherein the -H of the hydroxy may be replaced by a substituted or unsubstituted ammonium ion or a Group IA or IIA light metal.

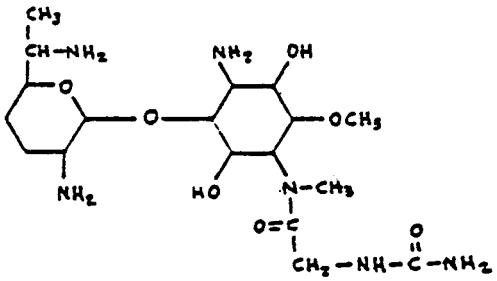
(1) Note. An example of a compound provided for herein is:



419 This subclass is indented under subclass 416. Compounds in which nitrogen is attached directly or indirectly to the hetero ring by acyclic nonionic bonding.

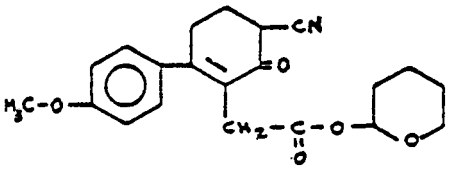
(1) Note. Examples of compounds provided for herein are:

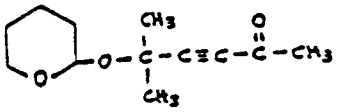




420 This subclass is indented under subclass 416. Compounds in which a -- group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium), is attached directly or indirectly to the hetero ring by acyclic nonionic bonding.

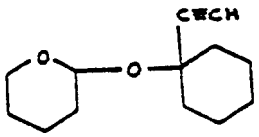
(1) Note. Examples of compounds provided for herein are:

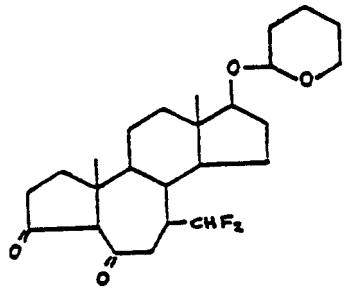




421 This subclass is indented under subclass 416. Compounds in which an alicyclic ring is bonded directly to the chalcogen.

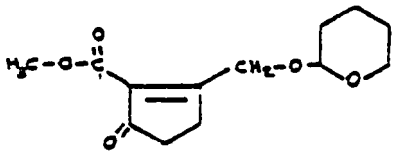
(1) Note. Examples of compounds provided for herein are:





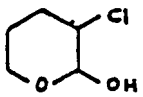
422 This subclass is indented under subclass 416. Compounds containing a carbocyclic ring which has at least two substituents, one of which contains the hetero ring and another one of which contains a -COO- group.

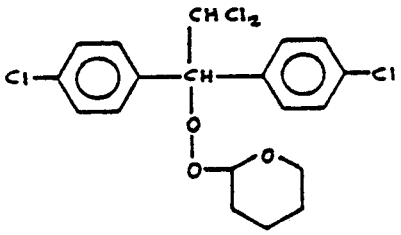
(1) Note. An example of compound provided for herein is:



423 This subclass is indented under subclass 416. Compounds in which hydroxy or halogen is attached directly or indirectly to the hetero ring by acyclic nonionic bonding, wherein the -H of the hydroxy may be replaced by a substituted or unsubstituted ammonium ion or a Group IA OR IIA light metal.

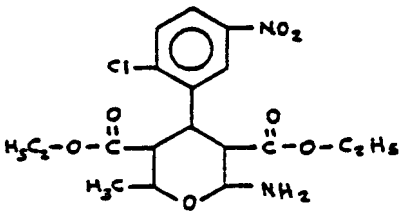
(1) Note. Examples of compounds provided for herein are:





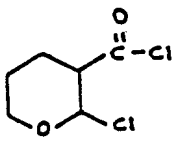
424 This subclass is indented under subclass 356. Compounds in which nitrogen is bonded directly to the hetero ring.

(1) Note. An example of a compound provided for herein is:



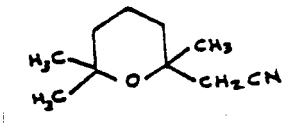
425 This subclass is indented under subclass 356. Compounds wherein a -- group, in which X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium), is bonded directly to the hetero ring.

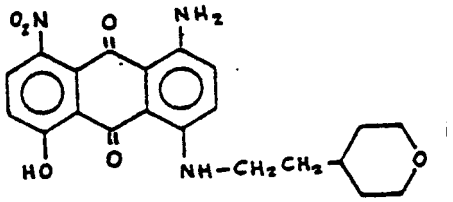
(1) Note. An example of a compound provided for herein is:



426 This subclass is indented under subclass 356. Compounds wherein nitrogen is attached indirectly to the hetero ring by nonionic bonding.

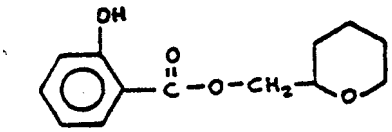
(1) Note. Examples of compounds provided for herein are:





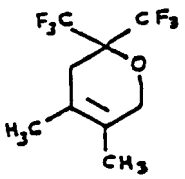
427 This subclass is indented under subclass 356. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the hetero ring by nonionic bonding.

(1) Note. An example of a compound provided for herein is:



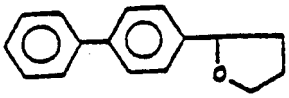
428 This subclass is indented under subclass 356. Compounds in which halogen is attached directly or indirectly to the hetero ring by nonionic bonding.

(1) Note. Examples of compounds provided for herein are:



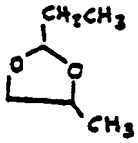
429 This subclass is indented under subclass 200. Compounds wherein the oxygen containing hetero ring has five ring members.

(1) Note. Examples of compounds provided for herein are:



430 This subclass is indented under subclass 429. Compounds wherein the hetero ring contains at least two ring oxygens.

(1) Note. An example of a compound provided for herein is:

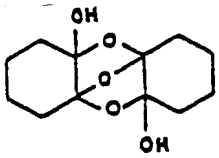


431 This subclass is indented under subclass 430. Compounds wherein the hetero ring contains at least three ring oxygens.

(1) Note. Ozonides are included herein. These products are usually formed by combining ozone with compounds containing a carbon-to-carbon multiple bond.

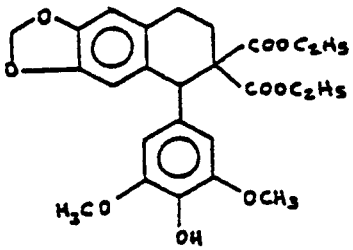
432 This subclass is indented under subclass 430. Compounds wherein the hetero ring is one of the cyclos of a polycyclo ring system.

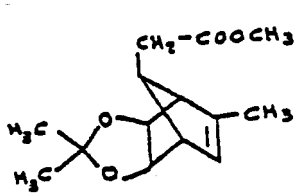
(1) Note. An example of a compound provided for herein is:



433 This subclass is indented under subclass 432. Compounds wherein the polycyclo ring system consists of exactly three rings.

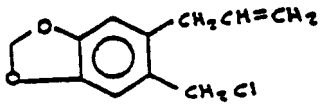
(1) Note. Examples of compounds provided for herein are:





434 This subclass is indented under subclass 432. Compounds wherein the polycyclo ring system consists of exactly two rings.

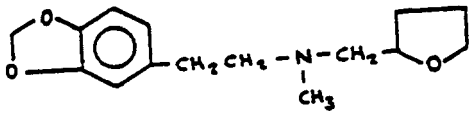
(1) Note. An example of a compound provided for herein is:

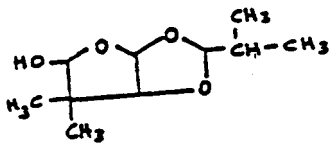


435 This subclass is indented under subclass 434. Compounds wherein at least two hetero rings are present.

(1) Note. The compounds provided for herein include those wherein both rings of the bicyclo ring system are hetero, as well as those wherein one hetero ring is part of the bicyclo ring system and the other hetero ring may be monocyclic or part of a different bicyclo ring system.

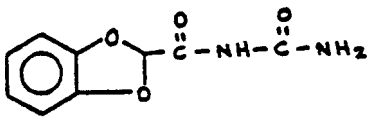
(2) Note. Examples of compounds provided for herein are:





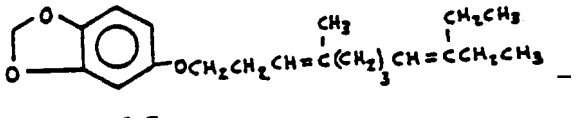
436 This subclass is indented under subclass 434. Compounds wherein a -- group, in which X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium), is bonded directly to the bicyclo ring system.

(1) Note. An example of a compound provided for herein is:



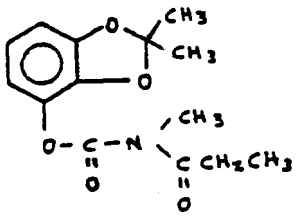
437 This subclass is indented under subclass 434. Compounds wherein the acyclic chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to the bicyclo ring system.

(1) Note. An example of a compound provided for herein is:



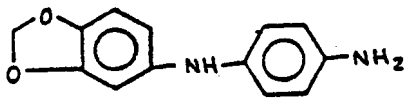
438 This subclass is indented under subclass 437. Compounds wherein a -- group, in which X is chalcogen (i.e. oxygen, sulfur, selenium or tellurium), is attached indirectly to the bicyclo ring system by nonionic bonding.

(1) Note. An example of a compound provided for herein is:



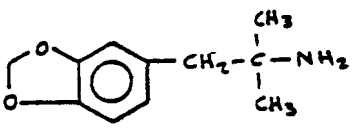
439 This subclass is indented under subclass 434. Compounds wherein nitrogen is bonded directly to the bicyclo ring system.

(1) Note. An example of a compound provided for herein is:



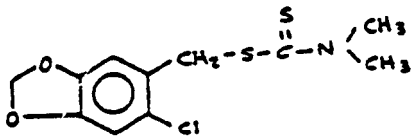
440 This subclass is indented under subclass 434. Compounds wherein nitrogen is attached indirectly to the bicyclo system by nonionic bonding.

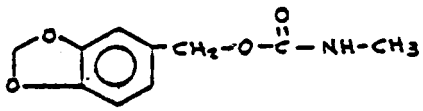
(1) Note. An example of a compound provided for herein is:



441 This subclass is indented under subclass 440. Compounds wherein the nitrogen is bonded directly to a X -- group, in which X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium).

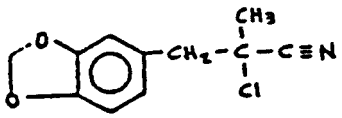
(1) Note. Examples of compounds provided for herein are:

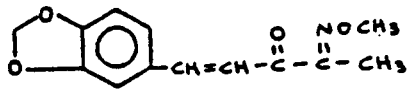




442 This subclass is indented under subclass 440. Compounds wherein the nitrogen is attached directly to carbon by a double or triple bond.

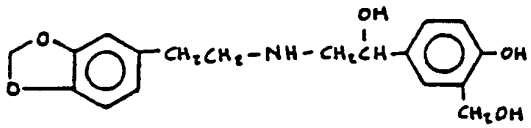
(1) Note. Examples of compounds provided for herein are:





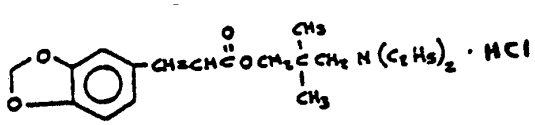
443 This subclass is indented under subclass 440. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the bicyclo ring system by nonionic bonding.

(1) Note. An example of a compound provided for herein is:



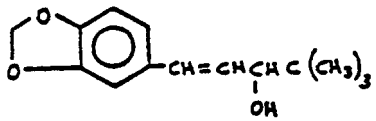
444 This subclass is indented under subclass 443. Compounds in which the chalogen, X, is in a -- group.

(1) Note. An example of a compound provided for herein is:



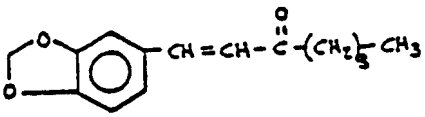
445 This subclass is indented under subclass 434. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the bicyclo ring system by nonionic bonding.

(1) Note. An example of a compound provided for herein is:



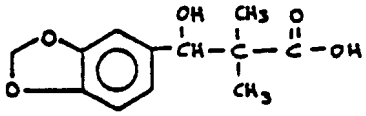
446 This subclass is indented under subclass 445. Compounds in which the chalcogen, X, is in a -- group.

(1) Note. An example of a compound provided for herein is:



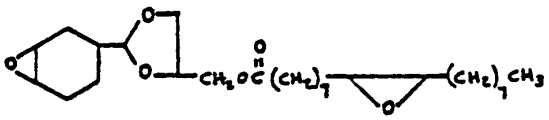
447 This subclass is indented under subclass 446. Compounds in which the -- is part of a --X- group, wherein the X's are the same or diverse chalcogens.

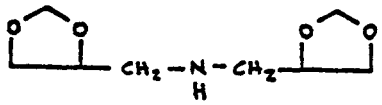
(1) Note. An example of a compound provided for herein is:



448 This subclass is indented under subclass 430. Compounds which contain at least two hetero rings, which may be the same or different.

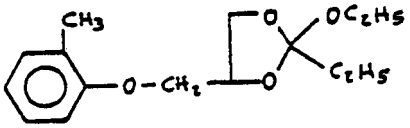
(1) Note. Examples of compounds provided for herein are:

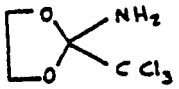




449 This subclass is indented under subclass 430. Compounds wherein nitrogen or chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to the hetero ring.

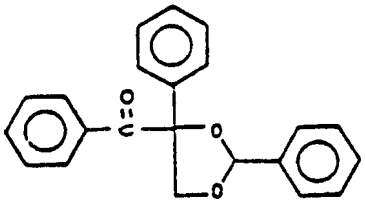
(1) Note. Examples of compounds provided for herein are:





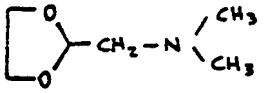
450 This subclass is indented under subclass 430. Compounds wherein a -- group, in which X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium), is bonded directly to the hetero ring.

(1) Note. An example of a compound provided for herein is:



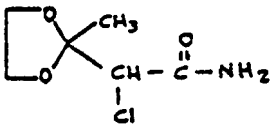
451 This subclass is indented under subclass 430. Compounds wherein nitrogen is attached indirectly to the hetero ring by nonionic bonding.

(1) Note. An example of a compound provided for herein is:



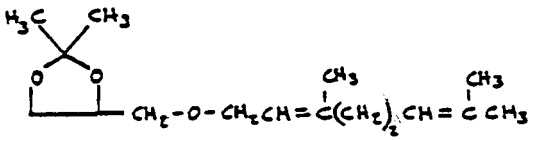
452 This subclass is indented under subclass 451. Compounds in which the nitrogen is bonded directly to a -- group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium).

(1) Note. An example of a compound provided for herein is:



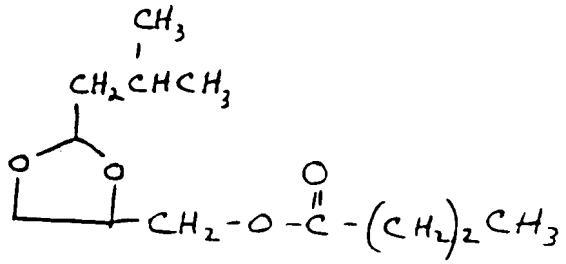
453 This subclass is indented under subclass 430. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the hetero ring by nonionic bonding.

(1) Note. An example of a compound provided for herein is:



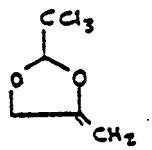
454 This subclass is indented under subclass 453. Compounds wherein the chalcogen, X, is in a -- group.

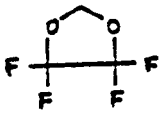
(1) Note. An example of a compound provided for herein is:



455 This subclass is indented under subclass 430. Compounds wherein halogen is attached directly or indirectly to the hetero ring by nonionic bonding.

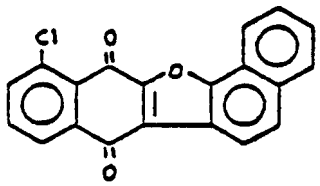
(1) Note. Examples of compounds provided for herein are:





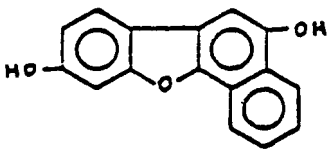
456 This subclass is indented under subclass 429. Compounds wherein the hetero ring is one of the cyclos of a polycyclo ring system.

(1) Note. An example of a compound provided for herein is:



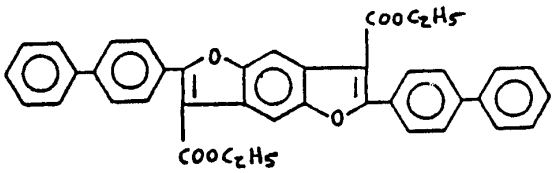
457 This subclass is indented under subclass 456. Compounds wherein the polycyclo ring system consists of exactly four rings.

(1) Note. An example of a compound provided for herein is:



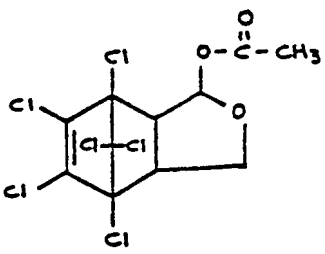
458 This subclass is indented under subclass 456. Compounds wherein the polycyclo ring system consists of exactly three rings.

(1) Note. An example of a compound provided for herein is:



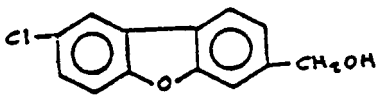
459 This subclass is indented under subclass 458. Compounds wherein at least three ring members of one cyclo are ring members of an additional cyclo in the tricyclo ring system.

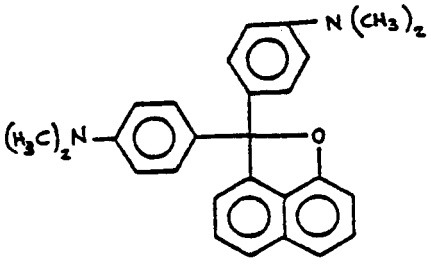
(1) Note. An example of a compound provided for herein is:



460 This subclass is indented under subclass 458. Compounds wherein the hetero ring shares ring members with two six-membered carbocyclic rings, which may contain double bonds between ring members.

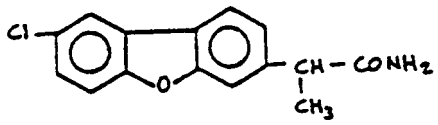
(1) Note. Examples of compounds provided for herein are:

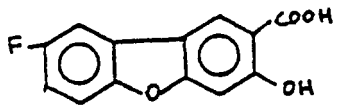




461 This subclass is indented under subclass 460. Compounds wherein a -- group, in which X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium), is attached directly or indirectly to the ring system by nonionic bonding.

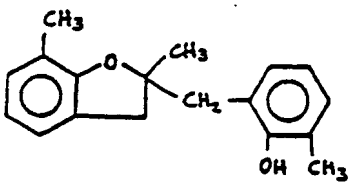
(1) Note. Examples of compounds provided for herein are:





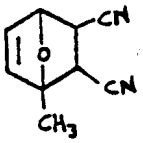
462 This subclass is indented under subclass 456. Compounds wherein the polycyclo ring system consists of exactly two rings.

(1) Note. An example of a compound provided for herein is:



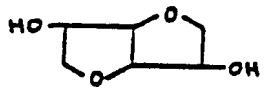
463 This subclass is indented under subclass 462. Compounds wherein three ring members of one cyclo are ring members of the other cyclo in the bicyclo ring system.

(1) Note. An example of a compound provided for herein is:



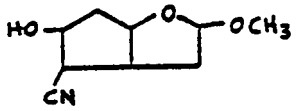
464 This subclass is indented under subclass 462. Compounds wherein at least two ring oxygens are present in the bicyclo ring system.

(1) Note. An example of a compound provided for herein is:



465 This subclass is indented under subclass 462. Compounds wherein the bicyclo ring system consists of two five-membered cyclos.

(1) Note. An example of a compound provided for herein is:

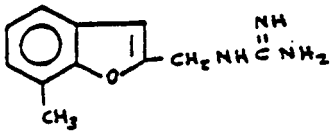


466 This subclass is indented under subclass 462. Compounds wherein acyclic chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to the hetero ring.

(1) Note. An example of a compound provided for herein is:

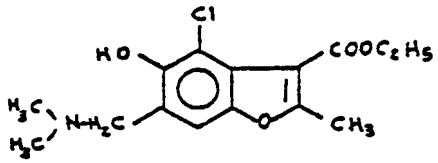
467 This subclass is indented under subclass 462. Compounds wherein nitrogen is attached directly to the hetero ring or is attached indirectly to the hetero ring by acyclic nonionic bonding.

(1) Note. Examples of compounds provided for herein are:



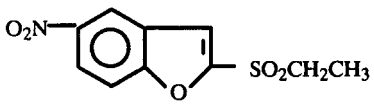
468 This subclass is indented under subclass 462. Compounds wherein a -- group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium), is bonded directly to the hetero ring.

(1) Note. An example of a compound provided for herein is:



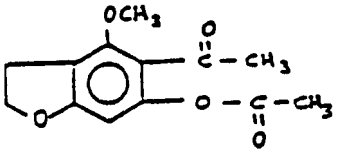
469 This subclass is indented under subclass 462. Compounds wherein a benzene ring is bonded directly to the hetero ring.

(1) Note. An example of a compound provided for herein is:



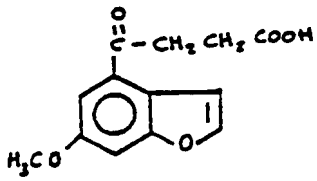
470 This subclass is indented under subclass 462. Compounds wherein the singly bonded chalcogen of a --X- group, in which the X's are the same or diverse chalcogens (i.e., oxygen, sulfur, selenium or tellurium), is bonded directly to the carbocyclic ring of the bicyclo ring system.

(1) Note. An example of a compound provided for herein is:



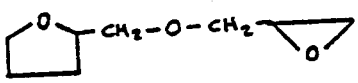
471 This subclass is indented under subclass 462. Compounds wherein there are plural double bonds between ring members of the hetero ring.

(1) Note. An example of a compound provided for herein is:



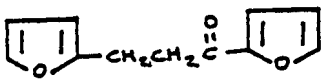
472 This subclass is indented under subclass 429. Compounds wherein at least two hetero rings, which may be the same or different, are present.

(1) Note. Examples of compounds provided for herein are:



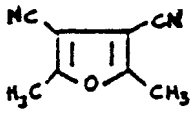
473 This subclass is indented under subclass 472. Compounds in which an acyclic -- group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium), is attached directly or indirectly to the hetero ring by nonionic bonding.

(1) Note. An example of a compound provided for herein is:



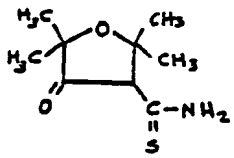
474 This subclass is indented under subclass 429. Compounds wherein a cyano group (-C=N) is bonded directly to the hetero ring.

(1) Note. An example of a compound provided for herein is:



475 This subclass is indented under subclass 429. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to the hetero ring.

(1) Note. An example of a compound provided for herein is:

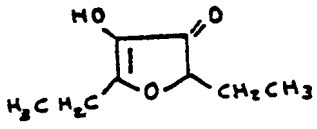


476 This subclass is indented under subclass 475. Compounds wherein at least two chalcogens are bonded directly to the hetero ring.

(1) Note. An example of a compound provided for herein is:

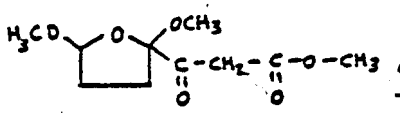
477 This subclass is indented under subclass 476. Compounds wherein at least one chalcogen is doubled bonded directly to the hetero ring.

(1) Note. An example of a compound provided for herein is:



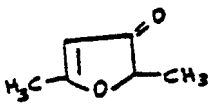
478 This subclass is indented under subclass 476. Compounds in which a -- group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium), is attached directly or indirectly to the hetero ring by nonionic bonding.

(1) Note. An example of a compound provided for herein is:



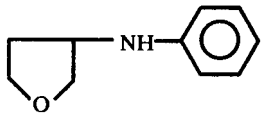
479 This subclass is indented under subclass 475. Compounds wherein there is a double bond between ring members of the hetero ring.

(1) Note. An example of a compound provided for herein is:



480 This subclass is indented under subclass 429. Compounds wherein nitrogen is bonded directly to the hetero ring.

(1) Note. An example of a compound provided for herein is:

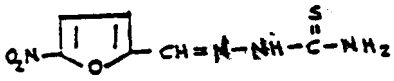


481 This subclass is indented under subclass 480. Compounds wherein a nitro group (-NO_2) is bonded directly to the hetero ring.

(1) Note. An example of a compound provided for herein is:

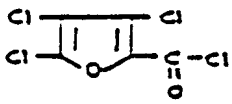
482 This subclass is indented under subclass 481. Compounds wherein the hetero ring and an additional nitrogen are bonded directly to the same carbon.

(1) Note. An example of a compound provided for herein is:



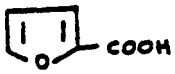
483 This subclass is indented under subclass 429. Compounds in which a -- group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium), is bonded directly to the hetero ring.

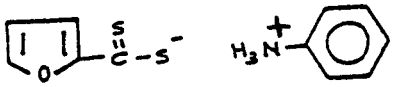
(1) Note. An example of a compound provided for herein is:



484 This subclass is indented under subclass 483. Compounds in which the -- is part of a --X- group, wherein the X's are the same or diverse chalcogens.

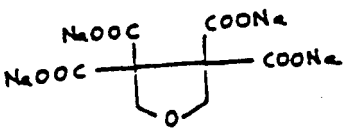
(1) Note. Examples of compounds provided for herein are:





485 This subclass is indented under subclass 484. Compounds wherein at least two --X- groups are bonded directly to the hetero ring.

(1) Note. An example of a compound provided for herein is:

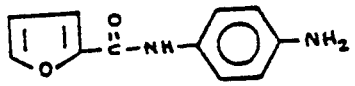


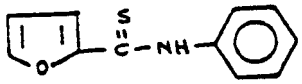
486 This subclass is indented under subclass 484. Compounds in which the carbon of the --X- group is bonded directly at the 3-position of the hetero ring.

(1) Note. An example of a compound provided for herein is:

487 This subclass is indented under subclass 483. Compounds wherein nitrogen is bonded directly to the -C- group.

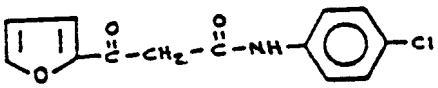
(1) Note. Examples of compounds provided for herein are:





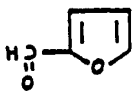
488 This subclass is indented under subclass 483. Compounds wherein an additional chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the hetero ring by nonionic bonding.

(1) Note. An example of a compound provided for herein is:



489 This subclass is indented under subclass 483. Processes for the preparation of furfural, per se.

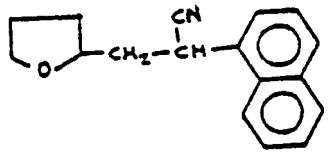
(1) Note. Furfural is:



490 This subclass is indented under subclass 483. Processes wherein furfural is separated from impurities or from the reaction medium.

491 This subclass is indented under subclass 429. Compounds wherein nitrogen is attached indirectly to the hetero ring by nonionic bonding.

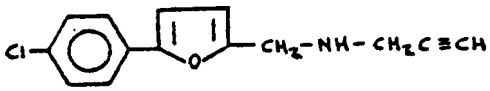
(1) Note. An example of a compound provided for herein is:



492 This subclass is indented under subclass 491. Compounds wherein nitrogen and the hetero ring are single bonded directly to the same acyclic saturated hydrocarbon group.

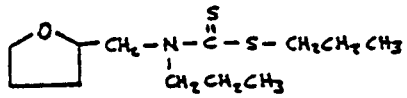
(1) Note. The expression "acyclic saturated hydrocarbon group" refers to alkylene.

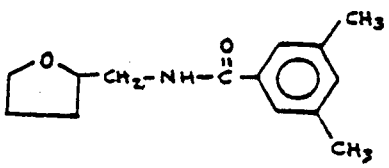
(2) Note. An example of a compound provided for herein is:



493 This subclass is indented under subclass 492. Compounds wherein the nitrogen is bonded directly to a -- group, in which X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium).

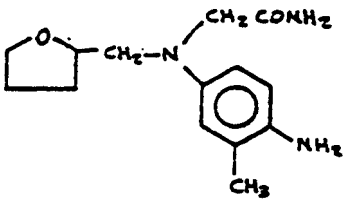
(1) Note. Examples of compounds provided for herein are:





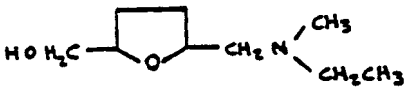
494 This subclass is indented under subclass 492. Compounds in which a -- group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium), is attached indirectly to the hetero ring by nonionic bonding.

(1) Note. An example of a compound provided for herein is:



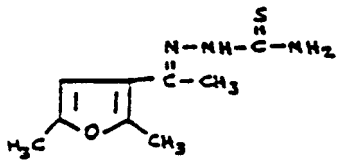
495 This subclass is indented under subclass 492. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium or tellurium) is attached indirectly to the hetero ring by acyclic nonionic bonding.

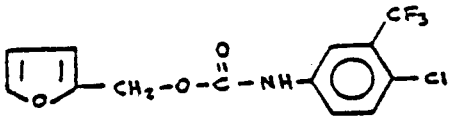
(1) Note. An example of a compound provided for herein is:



496 This subclass is indented under subclass 491. Compounds wherein a -- group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium), is attached indirectly to the hetero ring by nonionic bonding.

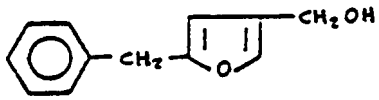
(1) Note. Examples of compounds provided for herein are:





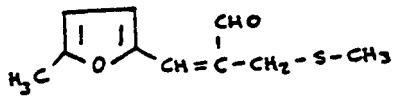
497 This subclass is indented under subclass 429. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the hetero ring by nonionic bonding.

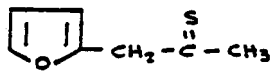
(1) Note. An example of a compound provided for herein is:



498 This subclass is indented under subclass 497. Compounds wherein the chalcogen, X, is in a -- group.

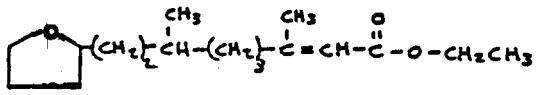
(1) Note. Examples of compounds provided for herein are:





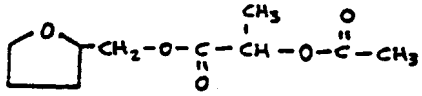
499 This subclass is indented under subclass 498. Compounds in which the -- is part of a --X- group, wherein the X's are the same or diverse chalcogens.

(1) Note. An example of a compound provided for herein is:



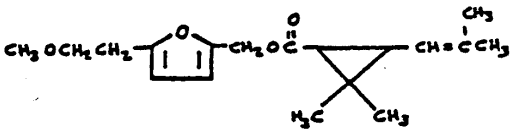
500 This subclass is indented under subclass 499. Compounds wherein at least two --X- groups are attached indirectly to the hetero ring by nonionic bonding.

(1) Note. An example of a compound provided for herein is:



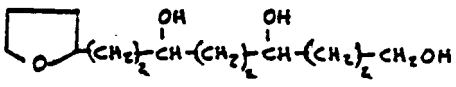
501 This subclass is indented under subclass 499. Compounds wherein an additional chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the hetero ring by nonionic bonding.

(1) Note. An example of a compound provided for herein is:



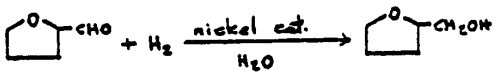
502 This subclass is indented under subclass 497. Compounds wherein at least two chalcogens (i.e., oxygen, sulfur, selenium, or tellurium) are attached indirectly to the hetero ring by nonionic bonding.

(1) Note. An example of a compound provided for herein is:



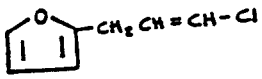
503 This subclass is indented under subclass 497. Processes wherein furfural is hydrogenated to yield a compound wherein oxygen is attached indirectly to the hetero ring by nonionic bonding.

(1) Note. An example of a process provided for herein is:



504 This subclass is indented under subclass 429. Compounds wherein halogen is attached directly or indirectly to the hetero ring by non-ionic bonding.

(1) Note. Examples of compounds provided for herein are:



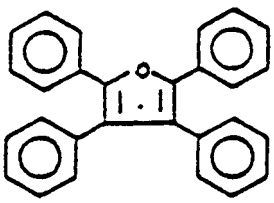
505 This subclass is indented under subclass 429. Compounds which contain plural double bonds between ring members of the hetero ring.

(1) Note. This subclass provides for furan, per se, and for processes relating to the production, purification, separation, etc., of furan.

(2) Note. The structural formula of furan is:

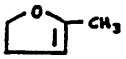
506 This subclass is indented under subclass 505. Compounds wherein the hetero ring is hydrocarbyl substituted.

(1) Note. An example of a compound provided for herein is:



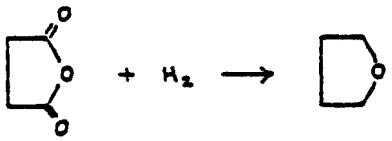
507 This subclass is indented under subclass 429. Compounds wherein exactly one double bond is present between ring members of the hetero ring.

(1) Note. An example of a compound provided for herein is:



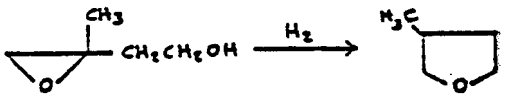
508 This subclass is indented under subclass 429. Processes wherein the five-membered hetero ring is prepared from a compound that contains a -C-O- group.

(1) Note. An example of a process provided for herein is:



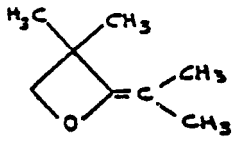
509 This subclass is indented under subclass 429. Processes wherein the five-membered hetero ring is prepared from a compound that contains a hydroxy group.

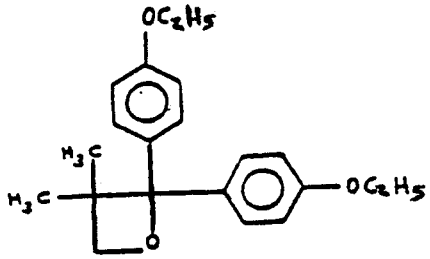
(1) Note. An example of a process provided for herein is:



510 This subclass is indented under subclass 200. Compounds in which the oxygen containing hetero ring has four ring members.

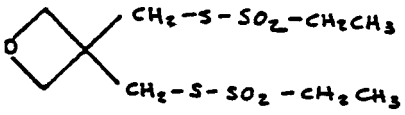
(1) Note. Examples of compounds provided for herein are:

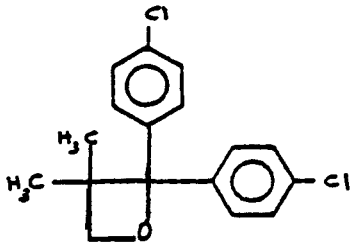




511 This subclass is indented under subclass 510. Compounds wherein sulfur or halogen is attached directly or indirectly to the hetero ring by nonionic bonding.

(1) Note. Examples of compounds provided for herein are:





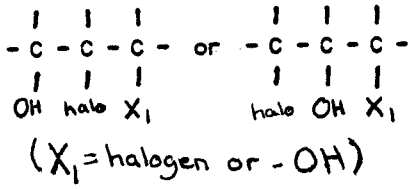
512 This subclass is indented under subclass 200. Compounds which contain a three-membered ring consisting of one ring oxygen and two ring carbons:

(1) Note. This subclass does not provide for polymerized oxirane compounds, e.g., polyethylene oxide, polypropylene oxide, etc.

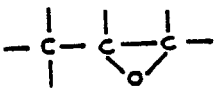
(2) Note. The three-membered ring provided for herein is frequently referred to as an epoxide, even though the term "epoxide" includes oxygen containing rings having more than three members.

513 This subclass is indented under subclass 512. Processes for producing, purifying, or recovering an oxirane containing compound.

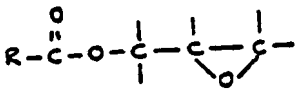
514 This subclass is indented under subclass 513. Processes which include obtaining a glycidyl moiety by a condensation reaction of an epihalohydrin, (X=halogen) or a glycerol mono- or di-halohydrin,



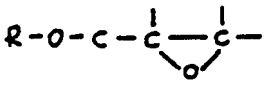
(1) Note. The glycidyl moiety is represented by the following basic structure.



515 This subclass is indented under subclass 514. Processes which include bonding oxy of a -C(=O)O- group to the acyclic carbon of the glycidyl moiety to form an ester:

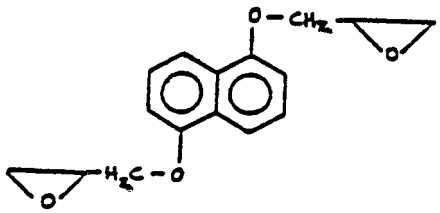


516 This subclass is indented under subclass 514. Processes which include bonding oxygen to the acyclic carbon of the glycidyl moiety to form an ether:



517 This subclass is indented under subclass 516. Processes wherein the glycidyl ether oxygen is bonded to a benzene ring.

(1) Note. An example of a compound prepared by the process herein is:



518 This subclass is indented under subclass 513. Processes which include the formation of an oxirane ring.

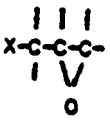
519 This subclass is indented under subclass 518. Processes wherein the functional group -- in an aldehyde or ketone undergoes a reaction to form an oxirane ring.

520 This subclass is indented under subclass 518. Processes wherein (1) a halchydrin (X=halogen) is dehydrohalogenated to form an oxirane ring or (2) a hypohalite or hypohalous acid reacts with an ethylenically unsaturated compound at the site of ethylenic unsaturation.

(1) Note. The hypohalite or hypohalous acid may be formed in situ, e.g., from X_2 and H_2O.

521 This subclass is indented under subclass 520. Processes of forming a glycidyl containing compound wherein bonded directly to the acyclic carbon of the glycidyl moiety is chalcogen (e.g., oxygen, sulfur, selenium, or tellurium), cyano (i.e., -C=N), nitrogen, or halogen.

(1) Note. This subclass includes the formation of glycidyl ethers, esters, amides, etc. The compounds formed have the following basic structure, where X=chalcogen, -CN, -N, halogen.



522 This subclass is indented under subclass 520. Processes wherein the substituents on the oxirane ring of the compound formed are limited to hydrogen or hydrocarbon groups.

523 This subclass is indented under subclass 518. Processes for reacting an ethylenically unsaturated compound with an oxidizing agent so that oxygen supplied by the oxidizing agent forms an oxirane ring at the site of ethylenic unsaturation.

524 This subclass is indented under subclass 523. Processes wherein a reactant is in liquid form or wherein the reaction takes place in a substance which is liquid during the reaction.

525 This subclass is indented under subclass 524. Processes wherein the oxidizing agent includes an organic peracid.

526 This subclass is indented under subclass 525. Processes wherein the organic peracid is formed from a carboxylic acid and hydrogen peroxide in the epoxidation reaction medium rather than having been preformed and added to said reaction medium.

527 This subclass is indented under subclass 526. Processes wherein a naturally occurring unsaturated higher fatty acid having seven or more carbon atoms bonded to a carboxyl group, or

an unsaturated derivative thereof, is epoxidized.

(1) Note. The term “derivative”, as used herein, includes those chemical modifications which involve the conversion of the carboxyl group into a carbonylic derivative thereof which on hydrolysis reverts to the carboxyl group, e.g., salts, amides, esters, acid halides, and acid anhydrides, etc.

528 This subclass is indented under subclass 525. Processes wherein a naturally occurring unsaturated fatty acid having seven or more carbon atoms bonded to a carboxyl group, or unsaturated derivative thereof, is epoxidized.

(1) Note. The term “derivative”, as used herein, includes those chemical modifications which involve the conversion of the carboxyl group into a carbonylic derivative thereof which on hydrolysis reverts to the carboxyl group; e.g., salts, amides, esters, acid halides, and acid anhydrides, etc.

529 This subclass is indented under subclass 524. Processes in which the oxidizing agent includes R-OOH, wherein R is a organic radical.

SEE OR SEARCH THIS CLASS, SUBCLASS:

525, for a process of forming an oxirane ring wherein an organic peracid is utilized.

530 This subclass is indented under subclass 529. Processes wherein a boron containing catalyst is utilized.

531 This subclass is indented under subclass 524. Processes wherein the epoxidizing agent includes H_2O_2.

SEE OR SEARCH THIS CLASS, SUBCLASS:

526, for processes wherein a peracid is also present.

532 This subclass is indented under subclass 524. Processes wherein the epoxidizing agent includes a gas containing molecular oxygen.

533 This subclass is indented under subclass 532. Processes wherein a catalyst which contains a metal having a specific gravity greater than 4 is present.

534 This subclass is indented under subclass 523. Processes wherein a silver containing catalyst is employed.

535 This subclass is indented under subclass 534. Processes wherein the catalyst particles are fluidized by passing gaseous reactants upward through them.

536 This subclass is indented under subclass 534. Processes wherein a material containing a metal having a specific gravity greater than 4, in addition to the silver, is utilized.

537 This subclass is indented under subclass 534. Processes wherein a material which contains a Group IIA light metal is utilized.

538 This subclass is indented under subclass 534. Processes which include separating an oxirane containing compound from an impurity or by-product.

539 This subclass is indented under subclass 513. Processes wherein an ether group or -COO- group is formed.

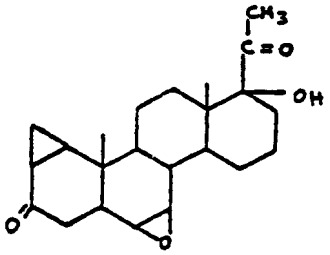
540 This subclass is indented under subclass 513. Processes wherein the oxirane containing compound is formed by isomerization, halogenation, hydrogenation, or dehydrohalogenation.

541 This subclass is indented under subclass 513. Processes which include separating an oxirane containing compound from an impurity or by-product.

542 This subclass is indented under subclass 541. Processes whereby the purification or recovery is effected by adsorption or by chemical reaction with an impurity.

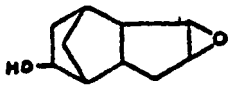
543 This subclass is indented under subclass 512. Compounds wherein the oxirane ring is a cyclo in a polycyclo ring system.

(1) Note. An example of a compound provided for herein is:



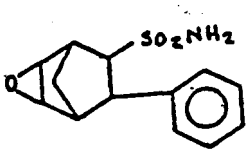
544 This subclass is indented under subclass 543. Compounds in which the polycyclo ring system consists of exactly four cyclos.

(1) Note. An example of a compound provided for herein is:



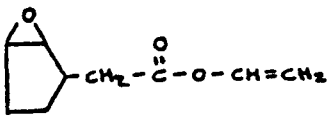
545 This subclass is indented under subclass 543. Compounds wherein the polycyclo ring system consists of exactly three cyclos.

(1) Note. An example of a compound provided for herein is:



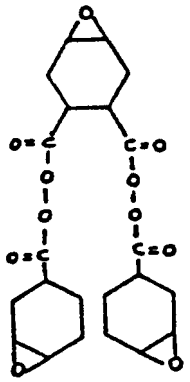
546 This subclass is indented under subclass 543. Compounds wherein the polycyclo ring system consists of exactly two cyclos.

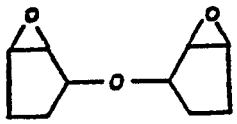
(1) Note. An example of a compound provided for herein is:



547 This subclass is indented under subclass 546. Compounds which contain at least two bicyclo ring systems, each having a hetero ring as one of the cyclos.

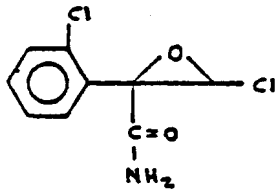
(1) Note. Examples of compounds provided for herein are:





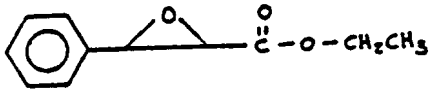
548 This subclass is indented under subclass 512. Compounds in which a -- group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium), is bonded directly to the oxirane ring.

(1) Note. An example of a compound provided for herein is:



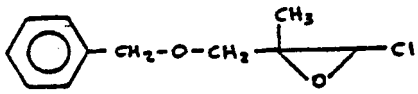
549 This subclass is indented under subclass 548. Compounds in which the -- is part of a --X- group, wherein the X's are the same or different chalcogens (i.e., oxygen, sulfur, selenium or tellurium).

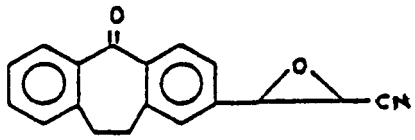
(1) Note. An example of a compound provided for herein is:

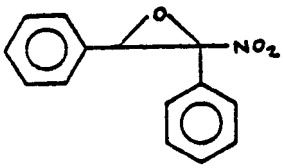


550 This subclass is indented under subclass 512. Compounds in which cyano (i.e., -C=N), nitrogen, or halogen is bonded directly to the oxirane ring.

(1) Note. Examples of compounds provided for herein are:

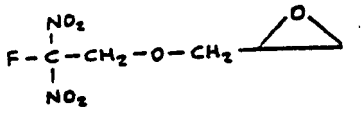


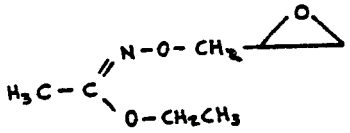


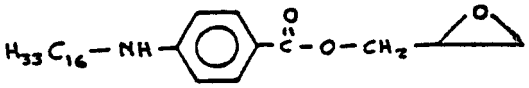


551 This subclass is indented under subclass 512. Compounds in which nitrogen is attached indirectly to the oxirane ring by nonionic bonding.

(1) Note. Examples of compounds provided for herein are:

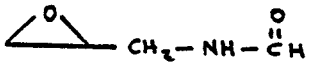


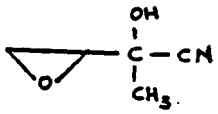




552 This subclass is indented under subclass 551. Compounds wherein cyano (i.e., -C=N) or nitrogen and the oxirane ring are bonded directly to the same carbon.

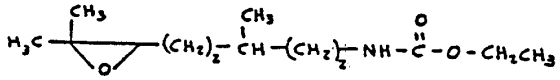
(1) Note. Examples of compounds provided for herein are:





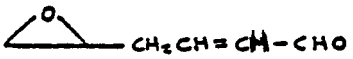
553 This subclass is indented under subclass 551. Compounds wherein the nitrogen is additionally bonded directly to a -- group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium).

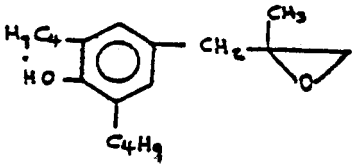
(1) Note. An example of a compound provided for herein is:



554 This subclass is indented under subclass 512. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the oxirane ring by nonionic bonding.

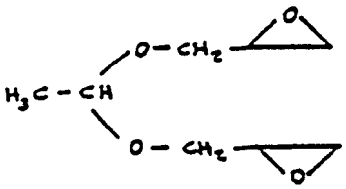
(1) Note. Examples of compounds provided for herein are:





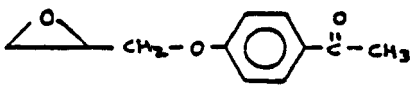
555 This subclass is indented under subclass 554. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) and the oxirane ring are both bonded directly to the same carbon.

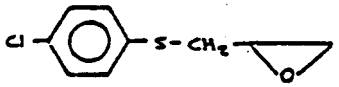
(1) Note. An example of a compound provided for herein is:



556 This subclass is indented under subclass 555. Compounds in which sulfur or a -- group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium), is attached indirectly to the oxirane ring by nonionic bonding.

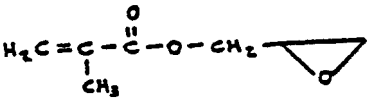
(1) Note. Examples of compounds provided for herein are:





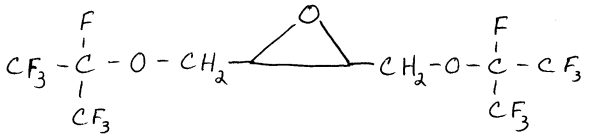
557 This subclass is indented under subclass 556. Compounds in which the chalcogen, X, is in a --X- group or in a -X-X- group, wherein the X's are the same or diverse chalcogens.

(1) Note. An example of a compound provided for herein is:



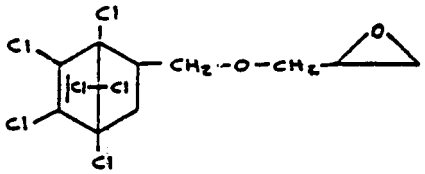
558 This subclass is indented under subclass 555. Compound in which halogen is attached indirectly to the oxirane ring by nonionic bonding.

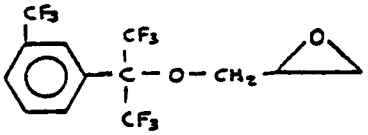
(1) Note. An example of a compound provided for herein is:



559 This subclass is indented under subclass 558. Compounds which contain a carbocyclic ring.

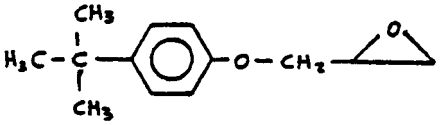
(1) Note. Examples of compounds provided for herein are:





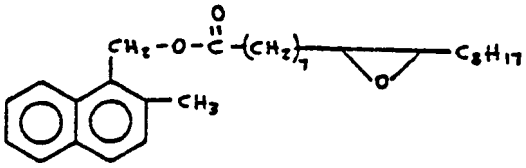
560 This subclass is indented under subclass 555. Compounds which contain a carbocyclic ring.

(1) Note. An example of a compound provided for herein is:



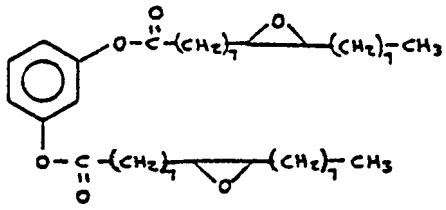
561 This subclass is indented under subclass 554. Compounds in which the chalcogen, X, is part of a --X- group, wherein the X's are the same or diverse chalcogens.

(1) Note. An example of a compound provided for herein is:



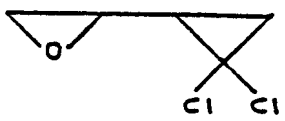
562 This subclass is indented under subclass 561. Compounds in which an additional -C(=X)- group or sulfur, other than as part of the -C(=X)X- group, is attached indirectly to the oxirane ring by nonionic bonding.

(1) Note. An example of a compound provided for herein is:



563 This subclass is indented under subclass 512. Compounds wherein halogen is attached indirectly to the oxirane ring by nonionic bonding.

(1) Note. An example of a compound provided for herein is:



END