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Nufarm Australia Limited v Corteva Agriscience LLC [2024] APO 12

Patent Application: 2017261483

Title: Compounds derived from herbicidal carboxylic acids and tetraalkylammonium or (arylalkyl) trialkylammonium hydroxides

Patent Applicant: Corteva Agriscience LLC

Opponent: Nufarm Australia Limited

Delegate: Felix White

Decision Date: 7 March 2024

Hearing Date: Written submissions received on 7 and 21 November 2023

Catchwords: **PATENTS** – Request under reg 5.17 for dismissal of opposition to amendments under s104(4) – do grounds and particulars raised in the Statement of Grounds and Particulars raise real issues of amendment allowability – opposition dismissed – no award of costs.

Representation: Patent attorney for the applicant: FPA Patent Attorneys
Patent attorney for the opponent: Arcadia Intellectual Property



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Patent Application: 2017261483

Title: Compounds derived from herbicidal carboxylic acids and tetraalkylammonium or (arylalkyl) trialkylammonium hydroxides

Patent Applicant: Corteva Agriscience LLC

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DECISION

The opposition to the amendments is dismissed. I make no award of costs.

REASONS FOR DECISION

Background

1. This decision relates to a request for dismissal of an opposition to amendments under s104(4) of the Patents Act 1990.¹
2. Patent application 2017261483 (“**the application**”) in the name of Corteva Agriscience LLC (“**Corteva**” or “**the Applicant**”) was accepted on 5 July 2019. The accepted claims are reproduced in Annex A.
3. This application was subsequently opposed by Nufarm Australia Limited (“**Nufarm**” or “**the Opponent**”) under s59 and a decision issued on 6 July 2022 partially upholding the opposition and giving the applicant an opportunity to amend the application to remove the grounds of refusal.
4. Corteva filed a first request for leave to amend the application under s104 on 1 September 2022. After leave was granted by the Commissioner, Nufarm opposed allowance of the amendment. Corteva requested that opposition be dismissed but subsequently withdrew the first amendment and filed a second statement of proposed amendments on 23 March 2023. This is the set of amendments that is currently under consideration, and is reproduced in Annex B.
5. Leave to amend was granted by the Commissioner on 27 April 2023 and advertised on 11 May 2023. Nufarm duly filed another notice of opposition on 11 July 2023 as required by

¹ “*The Act*” – all references to legislation are either to this Act or the corresponding Patents Regulations 1991

reg 5.10(1). A Statement of Grounds and Particulars (“SGP”) was duly filed on 10 August 2023 as required by reg 5.11(1).

6. Corteva, within the period prescribed by reg 5.17, requested that this second opposition be dismissed.
7. After some correspondence between the parties and the delegate (who had formed the initial view that the opposition should be dismissed) the dismissal was set for hearing by written submissions which were conducted concurrently.
8. Both parties’ submissions in chief were received on 7 November 2023 and submissions in answer were received on 21 November 2023. I then granted the Applicant an additional period of two months to address issues which were raised in the Opponent’s submissions in chief but had not been present in the SGP. The Applicant duly filed further comments on 7 February 2024.

The Statement of Grounds and Particulars – legal principles

9. It is worth highlighting that it is the SGP that sets out the basis for the opposition (and consequently the dismissal proceeding). As set out in the Patents Manual at 7.4.2:

The function of the statement of grounds and particulars is to give the applicant fair notice of the case to be met, and to define the issues of the opposition. The opponent is bound by the statement of grounds and particulars, and its case is confined to the issues raised in that statement, unless it is amended under reg 5.16.

10. I further note that reg 5.16(3) forbids amendment of the SGP while a request for dismissal is pending.

Dismissal proceedings – legal principles

11. Principles governing dismissal proceedings have been set out in *Les Laboratoires Servier v Apotex Pty Ltd* [2008] APO 11 (“**Servier**”) and restated more recently in *Eigen Technology Pty Ltd v CTA Australia Pty Ltd* [2022] APO 44.
12. I understand that the following principles (also highlighted by the Opponent in their submissions) are key:
 - The standard for dismissal of an opposition is whether it has no reasonable prospect of success. This has also been formulated as whether there is a real, rather than a fanciful, issue to be decided.
 - Since a dismissal precludes the possibility of evidence gathering, a dismissal will generally be inappropriate where evidence is required to decide an issue.

- However dismissal may be appropriate where there is an unambiguous technical divergence (a “safety-pin against an airplane”)² or when the issue is one which only requires textual or legal rather than technical construction.
- The Commissioner should be aware of potential injustice to a party caused by summary dismissal before the evidentiary period.
- The onus for establishing the case for dismissal initially lies with the applicant. If the applicant satisfies this onus, it will shift to the opponent to establish that the grounds of opposition are real as opposed to fanciful.

Amendment allowability – legal principles

13. It is also worthwhile outlining at this point the legal tests for amendment allowability under s102. After all, it is these tests that I must assess for whether there is a real as opposed to a fanciful issue.
14. The relevant parts of s102 are as follows (noting that “relevant time” is defined in s102(2A)(a) as being after acceptance).
 - (1) An amendment of a complete specification is not allowable if, as a result of the amendment, the specification would claim or disclose matter that extends beyond that disclosed in the following documents taken together:
 - (a) the complete specification as filed;
 - (b) other prescribed documents (if any).
 - (2) An amendment of a complete specification is not allowable after the relevant time if, as a result of the amendment:
 - (a) a claim of the specification would not in substance fall within the scope of the claims of the specification before amendment; or
 - (b) the specification would not comply with subsection 40(2), (3) or (3A).
15. All of the tests relate to the “result of the amendment”. Therefore any issue which was preexisting in the description or claims prior to amendment cannot form the basis for any findings under s102.³
16. The test for s102(1) requires a comparison of the text of the specification before and after amendment. This subsection is violated if, after amendment, the skilled reader has learned something that they had not known from the specification before amendment.⁴
17. The test for s102(2)(a) is whether something infringes the claims after amendment that had not infringed before amendment.⁵
18. The test for s102(2)(b) is whether as a result of the amendment the claims fail support, sufficiency or clarity requirements.⁶

² *Servier* at 12, citing *L’Aire Liquide, SA pour L’Etude et L’Exploitation des Procédé Georges Claude v The Commonwealth Industrial Gases Ltd* [1992] APO 1

³ Cf *RGC Mineral Sands Pty Ltd v Wimmera Industrial Minerals Pty Ltd* [1998] FCA 1358 at 466

⁴ *Commonwealth Scientific and Industrial Research Organisation v BASF Plant Science GmbH* [2020] FCA 328 at 202, citing *Richardson-Vicks Inc’s Patent* [1995] RPC 568 at 576

⁵ Cf Patents Manual of Practice and Procedure at 5.7.4.3

⁶ *Ibid.*

19. I note that each of these tests require an exercise of claim construction, at least to some extent. Since the task of claim construction is one for the Commissioner to do through the eyes of the skilled addressee, then it would seem in many cases that it would be unfair to the opponent for the evidentiary stage, in which the viewpoint of the skilled addressee is established, to be precluded.
20. Although there has been a preceding proceeding under s59 to which the opponent has referred in their submissions, I note that there is no evidence actually at hand in relation to the opposition to the s104 amendments, which is a distinct proceeding.
21. Nevertheless, it may be the case that grounds under s102 can be answered entirely by textual, logical, or otherwise unambiguous considerations without the need to inhabit the avatar of the skilled worker.
22. Indeed, this is what the delegate was able to do in *Servier*. For example, that case involved a question of construction of the enforceable scope of the “Swiss type” claim preamble with reference to the definition of “exploit” in the *Act*,⁷ which could be done without the need for the skilled worker’s avatar to provide technical input.

The opposed amendment

23. The opposed amendment, as explained in the Applicant’s cover letter dated 23 March 2023, was said to add the subject matter of both accepted claims 5 and 6 to accepted claim 1 to make amended claim 1.
24. Further, since accepted claim 9 was dependent on claim 8 which in turn was dependent on three independent claims (1, 3 and 7), these three options were also said to have been rewritten as amended claims 2, 3 and 7 respectively.
25. Similar new claims were added based on accepted claim 15.
26. To the extent that the accuracy of any of those statements is in question, a textual analysis of the amendments will be found later in this decision.

The Grounds and Particulars

27. The SGP raised grounds under s102(1) (the amended specification teaches the reader something new), s102(2)(b) (the amended specification does not disclose the invention clearly or completely enough) and s102(2)(b) (the amended claims are unclear).
28. I note that the ground of s102(2)(a) was not raised in the SGP.
29. I also note that the grounds only address amended claims 2, 3 and 7, all of which were said by the Applicant to reflect the rewriting of accepted claim 9 into independent form (based on accepted claims 1, 3 and 7 respectively).

⁷ *Servier* at 38

30. Each of these grounds was accompanied by particulars which each related to the term “one or more herbicides”.
31. As far as I can understand the particulars, they are in substance as follows:
- With respect to s102(1) – by promoting the term “one or more other herbicides” into an independent claim, the skilled worker has learned that a composition comprising 2,4-D choline and any other herbicide can be used when there are nearby sensitive crops and volatility is a problem.
 - With respect to s102(2)(b) – first ground – along the lines of the previous particular, the specification does not provide a sufficiently clear and complete disclosure of a composition comprising 2,4-D choline and any other herbicide which can be used when there are nearby sensitive crops and volatility is a problem.
 - With respect to s102(2)(b) – second ground – along the lines of the previous particular, it is not clear in the claims as amended whether the “one or more other herbicides” should be understood as limited to only ones which can be used when there are nearby sensitive crops and volatility is a problem, or not.
32. Although the SGP included statements to the effect that the opponent reserved the right to add further particulars, I note that amendment of the SGP can only be done through the provisions of the regulations, and in particular cannot be done while there is a request for dismissal on foot.
33. One week after filing the SGP, the Opponent had expressed an intention to adduce expert evidence that it submitted would be able to assist in construction of the amended claims for proper determination of the opposition to the amendment.

The request for dismissal

34. In the Applicant’s request for dismissal filed on 18 August 2023, the Applicant essentially submitted that claims 2, 3 and 7 as amended had the exact wording of accepted claim 9 and hence necessarily no issues can arise *as a result of the amendment*. That is to say, any issues that may be present now were necessarily also present before the amendment.

Has the applicant discharged their onus?

35. This submission is *prima facie* very strong. At this point it would seem reasonable that the onus shifts back to the Opponent to rebut the Applicant’s dismissal request and/or establish that the grounds and particulars are indeed real and not fanciful.

The Opponent’s submissions

36. In the Opponent’s submissions in answer, they asserted that there are a number of inconsistencies and omissions between claim 9 as accepted and new claims 2, 3 and 7 as amended.

37. This would indeed be a powerful refutation of the Applicant's request for dismissal which was predicated on accepted claim 9 being "not even amended".

38. In particular the Opponent pointed (in their submissions in answer at 11) to the following features that were asserted to have been omitted:

- (a) From claim 8: "a herbicidally effective amount";
- (b) From claim 8: "or mixtures thereof";
- (c) From claim 9: "further comprising"

39. The Opponent did not provide a side by side comparison of the accepted and amended claims to support this proposition. It therefore falls to me to carry out this comparison.

40. I will perform the nominal redrafting of claim 9 into independent form based on independent claim 1. In this way it can be compared with amended claim 2. The same analysis would apply *mutatis mutandis* to amended claims 3 and 7, as I am satisfied that claims 2, 3 and 7 are at least consistent with each other.

41. Accepted claim 9 is as follows:

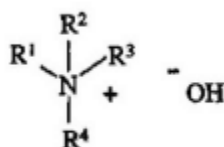
9. A herbicidal composition according to claim 8 further comprising one or more other herbicides.

42. Inserting the text of claim 8 (dotted underline) gives:

9/8. A herbicidal composition comprising a herbicidally effective amount of a compound, according to any one of claims 1 to 7, or mixtures thereof, in admixture with an agriculturally acceptable adjuvant or carrier further comprising one or more other herbicides.

43. Inserting the text of claim 1 (dashed underline) gives:

9/8/1. A herbicidal composition comprising a herbicidally effective amount of a herbicidal compound comprising the reaction product produced by the process of combining 2,4-dichlorophenoxyacetic acid; and a (tetraalkyl) ammonium hydroxide; in which the (tetraalkyl) ammonium hydroxide is a compound of the formula



wherein when R¹, R² and R³ are methyl, R⁴ is not methyl, or mixtures thereof, in admixture with an agriculturally acceptable adjuvant or carrier further comprising one or more other herbicides.

44. This can now be directly compared with claim 2 as amended:

<p>9/8/1. <u>A herbicidal composition comprising a herbicidally effective amount of</u></p> <p><u>a herbicidal compound comprising the reaction product produced by the process of combining 2,4-dichlorophenoxyacetic acid; and a (tetraalkyl)ammonium hydroxide; in which the (tetraalkyl)ammonium hydroxide is a compound of the formula</u></p> $\begin{array}{c} \text{R}^2 \\ \\ \text{R}^1 - \text{N} - \text{R}^3 \\ \\ \text{R}^4 \end{array} + \text{OH}^-$ <p><u>wherein when R¹, R² and R³ are methyl, R⁴ is not methyl,</u></p> <p><u>or mixtures thereof, in admixture with an agriculturally acceptable adjuvant or carrier</u></p> <p>further comprising one or more other herbicides.</p>	<p>2. A herbicidal composition comprising:</p> <p>(a) a herbicidal compound comprising the reaction product produced by the process of combining 2,4-dichlorophenoxyacetic acid; and a (tetraalkyl)ammonium hydroxide; in which the (tetraalkyl)ammonium hydroxide is a compound of the formula</p> $\begin{array}{c} \text{R}^2 \\ \\ \text{R}^1 - \text{N} - \text{R}^3 \\ \\ \text{R}^4 \end{array} + \text{OH}^-$ <p>wherein when R¹, R² and R³ are methyl, R⁴ is not methyl; and</p> <p>(b) one or more other herbicides;</p> <p>wherein the reaction product and the one or more other herbicides are in admixture with an agriculturally acceptable adjuvant or carrier.</p>
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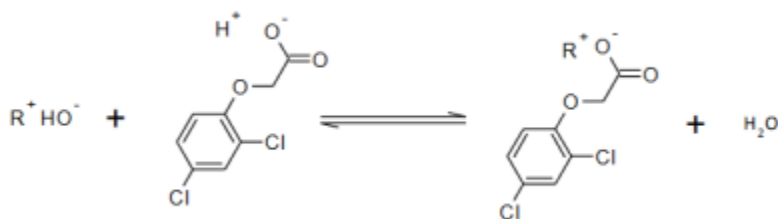
45. It can therefore be seen from this comparison that the Opponent's allegation as to claim discrepancies is correct. Amended claim 2 lacks the wording "a herbicidally effective amount" at the beginning, omits the option of mixtures of compounds of (a), and removes the term "further comprising". The last of these also results in the order of the final two claim elements being reversed.
46. It follows that the case for dismissal based on textual identity between the claims is indeed based on a flawed premise.

Has the Opponent discharged their onus?

47. I agree with the Opponent that the text of the claims as amended diverges from the text before amendment. However I am still not satisfied that the Opponent has established a real case for proceeding to the evidentiary stage based on the particulars in the SGP. The reasons for this are as follows.
48. In their submissions in chief, the Opponent sought to develop an argument based on a "careful consideration of the chemistry involved" as to how the term "one or more other herbicides" would be understood by the skilled reader before and after amendment. As I

understand it, this argument proposed to establish, with the benefit of evidence yet to be filed, the following:

- Claim 8 as accepted (prior to amendment) would have been understood to include 2,4-D acid in equilibrium with the tetraalkylammonium salt, by virtue of the fact that it is in solution with an agriculturally acceptable carrier.



- Consequently, the “further ... one or more other herbicides” in claim 9 could only have been understood to be herbicides other than 2,4-D acid, which would have already been present in the composition of claim 8, in equilibrium with the salt.
- In claims 2, 3 and 7 after amendment, the phrase “one or more other herbicides” is now present immediately after the definition of the tetraalkylammonium salt. Thus, the skilled worker would understand this phrase to also include 2,4-D acid itself, which is “other” to the tetraalkylammonium salt.
- Therefore the meaning of this term has changed.

49. I trust that I have done justice to this line of argument (one that in my letter of 12 December 2023 I said I had difficulty following) after more detailed consideration of the parties’ submissions.
50. Nevertheless, even if the Opponent was able to make good on its proposition that “one or more other herbicides” includes 2,4-D acid after amendment, I do not see how this could perturb s102. As I understand it, this proposition seeks to contend that claims 2, 3 and 7 after amendment, to the extent that they could be construed as being directed to the tetraalkylammonium salt and 2,4-D acid in a carrier, are identical to claim 8 as the Opponent characterised it before amendment.
51. Therefore, I fail to see how any issues can arise as a result of this amendment given that, even accepting the Opponent’s proposition, any information or defects associated with new claims 2, 3 and 7 must have already been present in accepted claim 8.
52. It follows that there is no real issue arising from the term “one or more other herbicides” in the claims as amended. I would dismiss those particulars, and since there were no others in the SGP, I will dismiss the opposition *in toto*.

Other issues

53. In my letters of 12 December 2023 and 16 February 2024 I observed that a potentially relevant issue, not present in the SGP, had been raised in the Opponent’s submissions in chief.
54. In short, this potential issue is that the omission of the words “herbicidally effective amount” could have led to a construction of the claims in which the composition of

amended claims 2, 3 and 7 need not contain more than a miniscule (ineffective) amount of tetraalkylammonium 2,4-D, and that this could potentially lead to issues under s102(1), (2)(a) and/or (2)(b). This was addressed by the Applicant's submissions of 7 February 2024, to the effect that a purposive construction of these claims in view of the specification as a whole would reject that possibility as absurd and that the claims should be purposefully construed to be identical in scope to the respective dependent claims before amendment.

55. I only raise this point at this stage because reg 10.6B(3) gives the Commissioner the power to revoke a grant of leave to amend, but only if the Commissioner is satisfied, given all the circumstances, that the leave to amend should not have been granted and it is reasonable to revoke the grant.
56. On the balance of probabilities, and on the basis of information available to me, I am more satisfied than not that the Applicant's approach to purposive construction should be accepted. Therefore it is not appropriate to revoke leave to amend (something that I could not do without giving the Applicant an opportunity to be heard in any event as per reg 22.22(1)).
57. It is perhaps unfortunate that this application will proceed to final determination of the s59 opposition with the scope of the claims still apparently the subject of contention between the parties. However that will be a matter for the delegate disposing of the s59 opposition and is not relevant to the instant request for dismissal under s104(4) and reg 5.17.
58. I note that the Applicant, in their letter of 7 February 2024, signalled a potential willingness to make further amendments to "resolve this issue once and for all", but did not wish to endure yet another potential opposition to further amendments. They suggested in paragraph 15 of that letter that any further amendments should instead be a "variation of the existing request".
59. Although the Applicant submitted they were unaware of provisions preventing them from proposing further amendments, there are conversely no provisions that allow a "variation" of amendments for which leave to amend has already been granted. Indeed such a variation would effectively circumvent the advertisement and opposition process. s104(4) explicitly states that any and all amendments may be opposed, and reg 10.5(2) explicitly states that all amendments to a complete specification after acceptance must be advertised for opposition.
60. It is of course open to the Applicant to file further amendments at any time (apart from when relevant proceedings are pending) through the usual process.

Costs

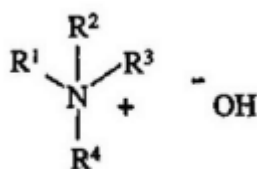
61. This brings me to the issue of costs, which conventionally follow the event.
62. In the present proceedings, the Applicant has argued for a variation of costs in its favour "due to the vexatious nature of this hearing in the face of 3 separate dismissals".
63. On the other hand, the Opponent pointed to the fact that an earlier amendment had been opposed and withdrawn, requiring the Opponent to file a further opposition.

64. I do not view either opposition proceedings or dismissal proceedings as inherently vexatious. Each of them are explicitly provided for in the Act and Regulations. Much as oppositions themselves are intended to be a relatively expeditious and inexpensive way to review decisions of the Commissioner, I view dismissal proceedings as a remedy which allow applicants to deal with fanciful oppositions in a relatively expeditious and inexpensive manner, and costs for the dismissal proceeding can be awarded to offset the expense incurred.
65. The Applicant's reference to "three separate dismissals" appears to be misplaced. Although it was the case that delegates did refer to their intent to dismiss this opposition (as well as the previous opposition) on a number of occasions, those were preliminary opinions and not final decisions.
66. Indeed, the fact that the first amendment was withdrawn points, *prima facie*, to the worthiness of the first opposition, for which no costs have been awarded to date.
67. Taking all of the above factors into account I consider it appropriate for the parties to bear their own costs.

Felix White
Delegate of the Commissioner of Patents

ANNEX A – Claims as Accepted

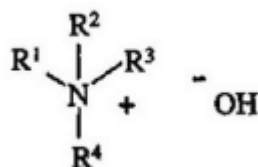
1. A herbicidal compound comprising the reaction product produced by the process of combining
 2,4-dichlorophenoxyacetic acid; and
 a (tetraalkyl)ammonium hydroxide;
 in which the (tetraalkyl)ammonium hydroxide is a compound of the formula



wherein when R¹, R² and R³ are methyl, R⁴ is not methyl.

2. A herbicidal compound according to claim 1; wherein R¹, R² and R³ independently represents (C₁-C₁₆) alkyl or any two of R¹, R² and R³ represent -(CH₂)_n- where n is an integer from 3-5 and R⁴ represents ((C₁-C₁₆) alkyl or arylalkyl).

3. A herbicidal compound comprising the reaction product produced by the process of combining
 2,4-dichlorophenoxyacetic acid; and
 a (tetraalkyl)ammonium hydroxide;
 in which the (tetraalkyl)ammonium hydroxide is a compound of the formula



wherein R¹, R² and R³ independently represents (C₁-C₁₆) alkyl or any two of R¹, R² and R³ represent -(CH₂)_n- where n is an integer from 3-5 and R⁴ represents ((C₁-C₁₆) alkyl or arylalkyl).

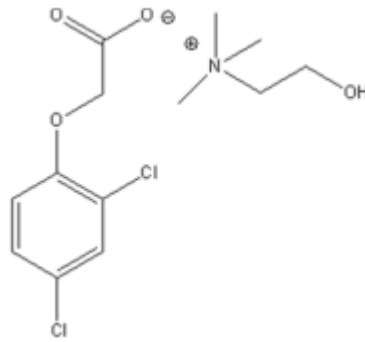
4. A herbicidal compound according to any one of claims 1 to 3 in which R¹, R² and R³ are CH₃ and R⁴ is (C₂-C₁₆) alkyl or arylalkyl.

5. A herbicidal compound according to claim 4 in which R⁴ is benzyl or hexadecyl.

6. A herbicidal compound according to any one of claims 1 to 3 in which R¹, R² and R³ and R⁴ are all ethyl, propyl or, butyl.

7. A herbicidal compound comprising the reaction product produced by the process of combining
 2,4-dichlorophenoxyacetic acid; and
 choline hydroxide,

said herbicidal compound having the formula:



8. A herbicidal composition comprising a herbicidally effective amount of a compound, according to any one of claims 1 to 7, or mixtures thereof, in admixture with an agriculturally acceptable adjuvant or carrier.

9. A herbicidal composition according to claim 8 further comprising one or more other herbicides.

10. A herbicidal composition according to claim 8 or 9 wherein the concentration of active ingredients in the composition is from 0.001 to 98 percent by weight.

11. A herbicidal composition according to claim 8 or 9 wherein the concentration of active ingredients in the composition is from 0.1 to 90 percent by weight.

12. A method of controlling undesirable vegetation which comprises contacting the vegetation or the locus thereof with, or applying to the soil to prevent the emergence of vegetation, a herbicidally effective amount of a compound according to any one of claims 1 to 7.

13. A method of controlling undesirable vegetation which comprises contacting the vegetation or the locus thereof with, or applying to the soil to prevent the emergence of vegetation, a herbicidally effective amount of a composition according to any one of claims 8 to 11.

14. A method of controlling undesirable vegetation in a crop that has been made tolerant or resistant to 2,4-dichlorophenoxyacetic acid, which comprises contacting the vegetation or the locus thereof with, or applying to the soil to prevent the emergence of vegetation, a herbicidally effective amount of a compound according to any one of claims 1 to 7.

15. A method of controlling undesirable vegetation in a crop that has been made tolerant or resistant to 2,4-dichlorophenoxyacetic acid, which comprises contacting the vegetation or the locus thereof with, or applying to the soil to prevent the emergence of vegetation, a herbicidally effective amount of a composition according to any one of claims 8 to 11.

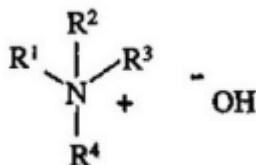
ANNEX B – Claims as amended

1. A herbicidal compound comprising the reaction product produced by the process of combining

2,4-dichlorophenoxyacetic acid; and

a (tetraalkyl)ammonium hydroxide;

in which the (tetraalkyl)ammonium hydroxide is a compound of the formula



wherein R¹, R² and R³ are methyl, and R⁴ is benzyl or hexadecyl; or
wherein R¹, R² and R³ and R⁴ are all ethyl, propyl or, butyl.

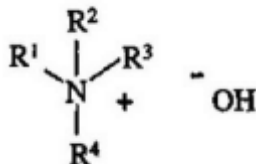
2. A herbicidal composition comprising:

(a) a herbicidal compound comprising the reaction product produced by the process of combining

2,4-dichlorophenoxyacetic acid; and

a (tetraalkyl)ammonium hydroxide;

in which the (tetraalkyl)ammonium hydroxide is a compound of the formula



wherein when R¹, R² and R³ are methyl, R⁴ is not methyl; and

(b) one or more other herbicides;

wherein the reaction product and the one or more other herbicides are in admixture with an agriculturally acceptable adjuvant or carrier.

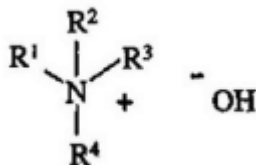
3. A herbicidal composition comprising:

(a) a herbicidal compound comprising the reaction product produced by the process of combining

2,4-dichlorophenoxyacetic acid; and

a (tetraalkyl)ammonium hydroxide;

in which the (tetraalkyl)ammonium hydroxide is a compound of the formula



wherein R¹, R² and R³ independently represents (C₁-C₁₆) alkyl or any two of R¹, R² and R³ represent -(CH₂)_n- where n is an integer from 3-5 and R⁴ represents (C₂-C₁₆) alkyl or arylalkyl; and

(b) one or more other herbicides;

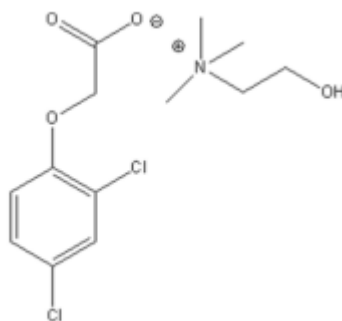
wherein the reaction product and the one or more other herbicides are in admixture with an agriculturally acceptable adjuvant or carrier.

4. A herbicidal composition according to claims 2 or 3 in which R^1 , R^2 and R^3 are CH_3 and R^4 is (C_2 - C_{16}) alkyl or arylalkyl.

5. A herbicidal composition according to claim 4 in which R^4 is benzyl or hexadecyl.

6. A herbicidal composition according to claim 3 in which R^1 , R^2 and R^3 and R^4 are all ethyl, propyl or, butyl.

7. A herbicidal composition comprising
 (a) a herbicidal compound comprising the reaction product produced by the process of combining
 2,4-dichlorophenoxyacetic acid; and
 choline hydroxide,
 said herbicidal compound having the formula:



; and

(b) one or more other herbicides;
 wherein the reaction product and the one or more other herbicides are in admixture with an agriculturally acceptable adjuvant or carrier.

8. A herbicidal composition comprising a herbicidally effective amount of a compound according to claim 1 in admixture with an agriculturally acceptable adjuvant or carrier.

9. A herbicidal composition according to claim 8 further comprising one or more other herbicides.

10. A herbicidal composition according to any one of claims 2 to 9 wherein the concentration of active ingredients in the composition is from 0.001 to 98 percent by weight.

11. A herbicidal composition according to any one of claims 2 to 9 wherein the concentration of active ingredients in the composition is from 0.1 to 90 percent by weight.

12. A method of controlling undesirable vegetation which comprises contacting the vegetation or the locus thereof with, or applying to the soil to prevent the emergence of vegetation, a herbicidally effective amount of a compound according to claim 1 or a composition according to any one of claims 2 to 11.

13. A method of controlling undesirable vegetation in a crop that has been made

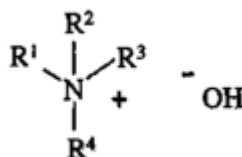
tolerant or resistant to 2,4-dichlorophenoxyacetic acid, which comprises contacting the vegetation or the locus thereof with, or applying to the soil to prevent the emergence of vegetation, a herbicidally effective amount of a compound, wherein the compound comprises

the reaction product produced by the process of combining

2,4-dichlorophenoxyacetic acid; and

a (tetraalkyl)ammonium hydroxide;

in which the (tetraalkyl)ammonium hydroxide is a compound of the formula



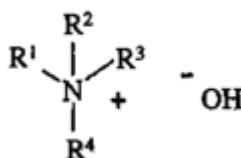
wherein when R¹, R² and R³ are methyl, R⁴ is not methyl.

14. A method of controlling undesirable vegetation in a crop that has been made tolerant or resistant to 2,4-dichlorophenoxyacetic acid, which comprises contacting the vegetation or the locus thereof with, or applying to the soil to prevent the emergence of vegetation, a herbicidally effective amount of a compound, wherein the compound comprises the reaction product produced by the process of combining

2,4-dichlorophenoxyacetic acid; and

a (tetraalkyl)ammonium hydroxide;

in which the (tetraalkyl)ammonium hydroxide is a compound of the formula



wherein R¹, R² and R³ independently represents (C₁-C₁₆) alkyl or any two of R¹, R² and R³ represent -(CH₂)_n- where n is an integer from 3-5 and R⁴ represents (C₂-C₁₆) alkyl or arylalkyl.

15. The method according to claim 13 in which R¹, R² and R³ are CH₃ and R⁴ is (C₂-C₁₆) alkyl or arylalkyl.

16. The method according to claim 15 in which R⁴ is benzyl or hexadecyl.

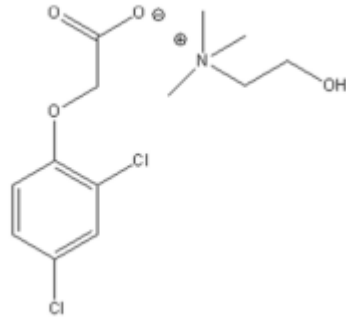
17. The method according to claim 14 in which R¹, R² and R³ and R⁴ are all ethyl, propyl, or butyl.

18. A method of controlling undesirable vegetation in a crop that has been made tolerant or resistant to 2,4-dichlorophenoxyacetic acid, which comprises contacting the vegetation or the locus thereof with, or applying to the soil to prevent the emergence of vegetation, a herbicidally effective amount of a compound, wherein the compound comprises the reaction product produced by the process of combining

2,4-dichlorophenoxyacetic acid; and

choline hydroxide,

said herbicidal compound having the formula:



19. A method of controlling undesirable vegetation in a crop that has been made tolerant or resistant to 2,4-dichlorophenoxyacetic acid, which comprises contacting the vegetation or the locus thereof with, or applying to the soil to prevent the emergence of vegetation, a herbicidally effective amount of a composition according to any one of claims 2 to 11.