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- (A)  Publication in OJ  
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**D E C I S I O N**  
of 12 September 1995

**Case Number:** T 0939/92 - 3.3.1

**Application Number:** 87303463.1

**Publication Number:** 0246749

**IPC:** C07D 249/12

**Language of the proceedings:** EN

**Title of invention:**  
Triazole herbicides

**Applicant:**  
AgrEvo UK Limited

**Opponent:**  
-

**Headword:**  
Triazoles/AGREVO

**Relevant legal provisions:**  
EPC Art. 84, 56

**Keyword:**  
"Clarity and support by the description (yes)"  
"Inventive step (no)"  
"Alleged effect not credible for all claimed alternatives"  
"Solution to more general technical problem obvious"

**Decisions cited:**  
T 0181/82, T 0021/83, T 0157/87, T 0133/85, T 0409/91,  
T 0766/91, T 0435/91, T 0024/81, T 0439/92, T 0465/92,  
T 0220/84, T 0001/80, T 0119/82, T 0022/82, T 0131/87,  
T 0742/89, T 0626/90, T 0741/91, T 0219/83, T 0020/81,  
T 0964/92, T 0845/90

**Headnote:**

I. If a claim concerns a group of chemical compounds per se, an objection of lack of support by the description pursuant to Article 84 EPC cannot properly be raised for the sole reason that the description does not contain sufficient information in order to make it credible that an alleged technical effect (which is not, however, a part of the definition of the claimed compounds) is obtained by all the compounds claimed (see Reasons No. 2.2.2).

II. The question as to whether or not such a technical effect is achieved by all the chemical compounds covered by such a claim may properly arise under Article 56 EPC, if this technical effect turns out to be the sole reason for the alleged inventiveness of these compounds (Reasons No. 2.4 to 2.6).



Case Number: T 0939/92 - 3.3.1

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.1  
of 12 September 1995

**Appellant:** AgrEvo UK Limited  
Hauxton  
Cambridge CB2 5HU (GB)

**Representative:** Wells, Norman David  
AgrEvo UK Limited  
Patent Department  
Chesterford Park  
Saffron Walden  
Essex CB10 1XL (GB)

**Decision under appeal:** Decision of the Examining Division of the European  
Patent Office dated 18 May 1992 refusing European  
patent application No. 87 303 463.1 pursuant to  
Article 97(1) EPC.

**Composition of the Board:**

**Chairman:** A. J. Nuss  
**Members:** R. K. Spangenberg  
J. A. Stephens-Ofner

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**Headword:**  
Triazoles/AGREVO

**Relevant legal provisions:**  
EPC Art. 84, 56

**Keyword:**  
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"Inventive step (no)"  
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"Solution to more general technical problem obvious"

**Decisions cited:**  
T 0181/82, T 0021/83, T 0157/87, T 0133/85, T 0409/91,  
T 0766/91; T 0435/91, T 0024/81, T 0439/92, T 0465/92,  
T 0220/84, T 0001/80, T 0119/82, T 0022/82, T 0131/87,  
T 0742/89, T 0626/90, T 0741/91, T 0219/83, T 0020/81,  
T 0964/92, T 0845/90

**Headnote:** follows  
-

## Summary of Facts and Submissions

- I. This appeal lies against the decision of the Examining Division of the EPO dated 18 May 1992, by which European patent application No. 87 303 463.1 (published as EP-A -0 246 749) was refused.
- II. The decision under appeal was based on an amended set of claims for all designated Contracting States except AT and ES and two sets of claims for AT and ES, respectively, all sets of claims having been received on 2 December 1991.

The stated grounds of refusal were that the first claims of the above-mentioned sets were not drafted in conformity with the requirements of Article 84 EPC and that the subject-matter of all claims of these sets lacked inventive step in respect of

D3: US-A-3 952 001,

D7: GB-A-2 120 665, and

D8: US-A-4 492 597.

The Examining Division objected, in view of Article 84 EPC, to the definition of the claimed class of compounds by vague terms such as "substituted". It considered that the term "substituted" could not be given its ordinary meaning in the context of products which were only claimed because of their biological activity. Since the special meanings ascribed to this term in the description were different in each case it was used, the claims were held to be unclear. In addition, the Examining Division found that the scope of the claims did not represent a reasonable generalisation of the examples provided in the description. The Examining Division further held that the above listed state of the

art would have given the skilled person sufficient incentive to prepare the compounds of the present application with a view to solving the technical problem of providing additional herbicidally active triazoles. The reasons for their conclusion were, on the one hand, that this person would have inferred from the above documents taken in combination that the essential structural element of the claimed compounds, conferring herbicidal activity to all chemical compounds containing it (i. e. the so-called "biophore") was the triazole ring bearing substituents in positions 1 and 3, and optionally in position 5, and, on the other hand, because the two structural modifications necessary for arriving at some of the claimed compounds, starting from those described in documents D7 and D8, were nothing more than a conventional bioisosteric replacement, together with an introduction of conventional substituents in the phenyl ring in position 5 of the triazole ring.

III. In a communication pursuant to Article 110(2) EPC the Board of Appeal questioned that the application documents contained sufficient internal evidence to render it credible that all claimed compounds would have the stated herbicidal activity. During the appeal proceedings, the Board further informed the Appellant that it might be prepared to acknowledge an inventive step if the subject-matter of the present application were limited to chemical compounds for which, on the basis of all the available evidence, the possession of herbicidal activity was credible, and indicated the extent to which this might be the case. In a further communication the Board referred the Appellant to

D9: C. Temple, "Triazoles 1,2,4" (Vol. 37 of the series The Chemistry of Heterocyclic Compounds), 1981, pages 261, 262, 286, 287 in combination with pages 411, 412 and 413,

and informed him that the compounds as claimed in the application could well be regarded as being products of conventional synthetic methods. If, therefore, the problem solved by the present patent application could only be seen as merely providing novel chemical compounds, then the compounds proposed and claimed as the solution of this problem could well be regarded as being obvious.

IV. In response to the Board's observations the Appellant filed, on 5 November 1994, five further amended sets of claims for the designated Contracting States other than ES and AT (marked set A to E). During the oral proceedings, which took place on 12 September 1995, he amended Claim 1 of Set A further in order to meet some objections raised by the Board in respect of Articles 84 and 123(2) EPC.

He requested that the decision under appeal be set aside and a patent be granted on the basis of Claim 1, as submitted in the course of oral proceedings and Claims 2 to 7 dated 27 October 1994, or on claims sets "B" to "E", dated 27 October 1994, by way of auxiliary requests 1 to 4. He also requested to refer two questions of law to the Enlarged Board of Appeal, in the terms submitted by him in the course of oral proceedings and marked "request 1" and "2nd request". Amended Claim 1 of Set A, as submitted during the oral proceedings, reads as follows:

1. The triazole sulphonamides of the formula:



and salts thereof, where:

R<sup>1</sup> represents hydrogen, alkyl of 1 to 6 carbon atoms, phenyl, or substituted or unsubstituted pyrimidin-2-yl;

R<sup>2</sup> represents hydrogen, alkyl of 1 to 6 carbon atoms, phenyl, amino, alkylamino of 1 to 4 carbon atoms, or 2,5-dimethylpyrrol-1-yl; and

R<sup>3</sup> represents optionally substituted phenyl;

with the following provisos:

- (a) R<sup>1</sup> and R<sup>2</sup> are not simultaneously hydrogen;
- (b) when R<sup>1</sup> represents hydrogen and R<sup>3</sup> simultaneously represents phenyl or 4-methylphenyl, R<sup>2</sup> does not represent phenyl;
- (c) when R<sup>1</sup> represents hydrogen, R<sup>2</sup> does not represent amino.

The first claims of Sets B to E contain more limited definitions of the substituents R<sup>1</sup> and R<sup>2</sup>. However, in all these claims R<sup>3</sup> represents optionally substituted phenyl.

The two questions of law submitted by the Appellant were as follows:

**"request 1:** If the closest approach to the prior art is deemed unobvious under Article 56, can any more distant approach to the prior art nevertheless be deemed obvious under Article 56?"



"2nd request: Does reliance by the Board on unsubstantiated common general knowledge have to be substantiated by the Board by documentary material in order to be valid?"

- V. In the statement of grounds of appeal, further written submissions, as well as during the oral proceedings the Appellant argued in respect of Article 84 EPC that the expressions used in Claim 1 were broad but perfectly clear and that there was therefore no reason to assume that they had a special meaning in the present case. In respect of Article 56 he submitted that documents D3, D7 and D8 would not have suggested to the skilled person that the compounds of the above formula I would have any herbicidal activity. One reason for this was, so he submitted, that it was scarcely possible to predict the influence of even small structural modifications on biological activity on the basis of the common general knowledge. He further argued that the statement in the decision under appeal that a skilled person would expect that all triazole compounds having a substituent in positions 1 and 3 and optionally another substituent in position 5 would have herbicidal activity was merely an unsubstantiated allegation.

Although the Appellant insisted that all compounds now being claimed possessed the stated herbicidal activity, he also submitted, in the alternative, that Article 56 EPC, which only related to obviousness with respect to the state of the art, did not provide a basis for limiting the subject-matter of claims such as those of the present application to compounds having any activity or indeed any technically useful property, since the answer to the question as to whether or not technically useful properties were achieved was wholly independent of the state of the art, so that an objection on this basis could not properly be raised under Article 56 EPC.

Moreover, he argued, relying on decision T 181/82, that if the Board would admit, as it was obviously prepared to do, that those of the claimed compounds which were structurally most closely related to the compounds disclosed in the cited state of the art, were inventive, it would logically follow that all compounds which were structurally less closely related to the known ones were likewise inventive. Furthermore, in respect of his first submission, as set out above, he argued that the present patent application did contain a great number of examples and activity data, on the basis of which it was reasonable to predict that all compounds covered by the present claims would have the stated activity. In addition, the unlimited substitution facilities claimed for the phenyl ring R<sup>3</sup> were, in his submission, justified by the well-known possibility that substituents such as amide groups might be eliminated after the application of an herbicide to the soil, so that it was possible that the active part of the claimed compounds did not contain the said substituent R<sup>3</sup>. In any case, so he argued, any doubts about the presence of the stated herbicidal activity that the Board of Appeal might entertain could only arise from its own but unsubstantiated common general knowledge. In this respect he submitted, relying on decisions T 21/83 and T 157/87, that any common general knowledge relied upon against the patentability of a patent application would have to be substantiated by reference to a particular document or documents. Finally, he admitted that the claimed compounds were prepared by conventional synthetic methods, but argued that this was not relevant, since the decisive question under Article 56 was not whether a skilled person **could** have prepared the claimed compounds, but whether he **would** have done so in view of the state of the art. In his submission, the state of the art in the present case contained no incentive whatsoever to provide the same compounds as

those of the present claims, and not any other compounds from the host of possible new compounds which were likewise, but only potentially, available through conventional synthetic methods.

VI. At the end of the oral proceedings the decision to dismiss the appeal and to refuse the requests to refer the two questions of law to the Enlarged Board of Appeal was announced.

### Reasons for the Decision

1. The appeal is admissible.
2. *Main request*
  - 2.1 The Board is satisfied that Claim 1 of Set A submitted during the oral proceedings meets the requirement of Article 123(2) EPC, and that the claimed subject-matter is novel. Since the decisive questions in this appeal are those of clarity and support by the description (Article 84 EPC) and of inventive step (Article 56 EPC), under which the appeal fails for the reasons set out below, it is not necessary to give any reason for this finding.
  - 2.2 The first issue to be decided is whether the present claims are objectionable under Article 84 EPC. The Examining Division has raised this objection under two headings, the first being lack of clarity, and the second being lack of support by the description.
    - 2.2.1 As to the first heading, the Examining Division held that e.g. the term "substituted" cannot be given its ordinary meaning, since the claim **related** to chemical

compounds having a biological activity. However, the present independent claim covers certain chemical compounds *per se*, and not just those compounds having a particular biological activity. Hence the biological activity of these compounds is not an essential technical feature of the claimed subject-matter, and thus not part of the definition of the claimed subject-matter, so that there is no reason for the term "substituted" not to have its ordinary technical meaning, namely "substituted by absolutely anything" (see point 6 of the decision under appeal). This meaning is, moreover, the one that was clearly intended by the Appellant. On this basis, Claim 1 is, in the Board's judgment, clear in the sense of Article 84 EPC.

- 2.2.2 As to the second heading, the Examining Division held that Claim 1 of the main request was an unreasonable generalisation of the examples contained in the description. However, in the Board's judgment, it does not follow from Article 84 EPC that a claim is objectionable simply because it is "unreasonably broad". In particular, this does not follow from the requirement that the claims must be supported by the description (which, pursuant to Rule 27(1)(e) EPC, need not include examples). Rather, the expression "support by the description" means that the technical features stated in the description as being essential features of the described invention must be the same as those used to define the invention in the claims (see decision T 133/85, OJ EPO 1988, 411, No. 2 of the reasons and decision T 409/91, OJ EPO 1994, 653, No. 3.2 of the reasons), for otherwise the claims would not be true definitions but mere descriptions. As was further pointed out in decision T 409/91, No. 3.3. and 3.4 of the reasons, a claim covering subject-matter which is not disclosed in the description in the manner required by Article 83 EPC is, in addition, not supported by the

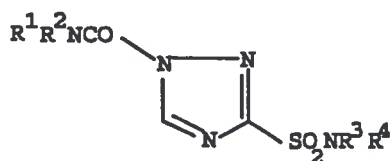
description within the meaning of Article 84 EPC. In the present case, it follows from the considerations contained in point 5' of the decision under appeal that the Examining Division had no doubts as to the possibility of **preparing** the claimed compounds. Furthermore, the Examining Division did not find that the description mentioned technical features as being essential features of the claimed invention which were not part of the definition of the present Claim 1, nor could the Board find any such feature. Instead, the Examining Division relied upon the fact that a skilled person upon reading the application documents would not have believed that all claimed compounds **would or could be likely to possess the alleged herbicidal activity**, which feature is, as already stated, not part of the definition of the subject-matter for which Claim 1 seeks protection. Therefore, the facts of the present case differ from those underlying decision T 409/91, so that an objection of lack of support by the description cannot, in the Board's judgment, be validly raised in the present case.

2.2.3. This does not mean, however, that the properties (or the technical effect) of the claimed subject-matter are irrelevant to the issue of the patentability of the claimed compounds, as was submitted by the Appellant. In the Board's judgment, this issue may not only arise under Article 84 EPC, but is also intimately linked to the issue of inventive step under Article 56 EPC, under which heading it will now be considered.

2.3. It hardly needs re-stating that the question of inventive step can only be considered on the basis of the relevant state of the art, see Article 56 EPC. However, Article 54(2) EPC does not limit the state of the art to written disclosure in specific documents; rather it defines it as including all other ways ("in

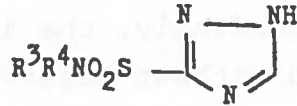
any other way") by which technical subject-matter can be made available to the public. Therefore, the absence of a reference to a particular document does not mean that there is no state of the art, as this could reside solely in the relevant common general knowledge, which, again, may or may not be in writing, i. e. in textbooks or the like, or be simply a part of the unwritten "mental furniture" of the notional "person skilled in the art". It is also clear that in the case of any dispute as to the extent of the relevant common general knowledge this, like any other fact under contention, has to be proved, e.g. by documentary or oral evidence (see also T 766/91 of 29 September 1993, No. 8.2 of the reasons). As in the present case, during the oral proceedings, the Appellant has abandoned his earlier contention that the starting materials and the synthetic methods necessary for preparing the claimed compounds were not available to those skilled in the art, taking into account the relevant common general knowledge, it is no longer necessary to do this. It suffices to accept D9 as a fair representation of the common general knowledge.

2.3.1 D3 relates inter alia to a class of compounds having the following general formula



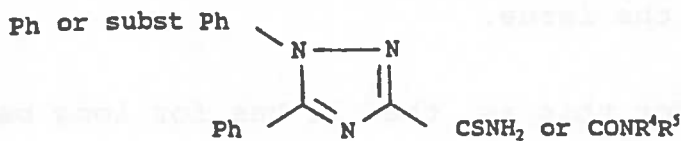
wherein R<sup>1</sup> to R<sup>4</sup> are selected from hydrogen or aliphatic substituents and wherein each substituent has at most eighth carbon atoms (see column 2, formula III). R<sup>3</sup> may also mean phenyl, which may be substituted by 1 to 3 halogen atoms. These compounds are said to have

herbicidal activity (column 1, lines 9 to 13). In addition, this document describes as starting material for obtaining the above compounds a class of compounds having the general formula



wherein R<sup>3</sup> and R<sup>4</sup> have the above meanings (see column 33, formula XIV). If R<sup>4</sup> is hydrogen, these compounds correspond to compounds of formula I of present Claim 1, wherein R<sup>1</sup> and R<sup>2</sup> are each hydrogen. Such compounds are excluded from present Claim 1 by proviso (a).

2.3.2 D7 and D8 each relate to similar groups of compounds corresponding to the general formula



wherein the substituents of the phenyl ring as well as the substituents R<sup>4</sup> and R<sup>5</sup> contain at most four carbon atoms. These compounds may be used as herbicides (see D7, page 1, lines 1 to 19 and D8, column 1, lines 17 to 43).

2.3.3 These documents together with the now accepted common general knowledge form the state of the art on the basis of which the issue of the inventive step of the claimed compounds needs to be decided in this appeal.

2.4. During the oral proceedings the Appellant argued that the only question arising under Article 56 EPC in the present case was whether or not, in the light of the above state of the art, a skilled person would have

prepared, or tried to prepare, the claimed compounds of formula I (see point IV above), wherein R<sup>3</sup> was optionally substituted phenyl. **Article 56 did not expressly require**, so he submitted, **that the subject-matter of a patent application had to solve a technical problem**, and that, accordingly, the issue of inventive step had to be decided without regard to the solution of any technical problem.

- 2.4.1 Whilst the Board agrees with the Appellant that the above question is the one which has to be answered under Article 56 EPC, it does not agree with his inference that the existence of a technical problem and its solution, including the problem of proposing alternatives to known activities (e.g. chemical processes) or physical entities (e.g. chemical compounds), is irrelevant to answering this question and so deciding the issue.
- 2.4.2. The reason for this is, that it has for long been a generally accepted legal principle that the extent of the patent monopoly should correspond to and be justified by the **technical contribution** to the art (see T 409/91, OJ EPO , No. 3.3. and 3.4 of the reasons, and T 435/91, OJ EPO 1995, 188, reasons No. 2.2.1 and 2.2.2). Now, whereas in both the above decisions this general legal principle was applied in relation to the extent of the patent protection that was justified by reference to the requirements of Articles 83 and 84 EPC, the same legal principle also governs the decision that is required to be made under Article 56 EPC, for everything falling within a valid claim has to be inventive. If this is not the case, the claim must be amended so as to exclude obvious subject-matter in order to justify the monopoly.



Moreover, in the Board's judgment, it follows from this same legal principle that the answer to the question what a skilled person would have done in the light of the state of the art depends in large measure on the technical result he had set out to achieve. In other words, the notional "person skilled in the art" is not to be assumed to seek to perform a particular act without some concrete technical reason: he must, rather, be assumed to act not out of idle curiosity but with some specific technical purpose in mind.

- 2.4.3 For this reason, the Boards of Appeal consistently decide the issue of obviousness on the basis of an objective assessment of the technical results achieved by the claimed subject-matter, compared with the results obtained according to the state of the art. It is then assumed that the inventor did in fact seek to achieve these results and, therefore, these results are taken to be the basis for defining the technical problem (or, in other words, the objective) of the claimed invention (which problem may, as already stated above, be to provide a further - or alternative - process or physical entity, here a group of chemical compounds). The next step is then to decide whether the state of the art suggested the claimed solution of this technical problem in the way proposed by the patent in suit (see e.g. T 24/81, OJ EPO 1983, 133, No 4 of the reasons). If the state of the art consists of written disclosures, it is often convenient, for practical reasons (see T 439/92-3.2.4 of 16 May 1994, No. 6.2.1 of the reasons), to base this examination on one document which is most closely related to the claimed subject-matter as starting point, and to consider whether the other documents suggest to obtain the technical results which distinguish the claimed subject-matter from this "closest state of the art".

2.4.4 The Board of Appeal is aware of decision T 465/92 of 14 October 1994 (to be published in OJ EPO, for Headnote see OJ EPO 5/1995, page XII). Although it was held in No. 9.1 of the reasons of this decision that the "problem and solution approach" is not a *sine qua non* for the determination of inventiveness by the EPO, it follows, in the Board's judgment, from the detailed explanations given in the following points 9.2 to 9.6 of the reasons, that in that case the Board refrained from identifying a certain document as "closest state of the art" and formulating a "technical problem" on the basis of such a state of the art. In the present case, however, the question of selecting a particular document as "closest state of the art" is not at issue. However, in decision T 465/92 the Board defined in point 5 of the decision the results which had been objectively achieved by the claimed invention (see in particular point 5.3), and then proceeded, on that basis, to deciding whether or not the cited state of the art, as a whole, would have suggested to the skilled person to achieve these results in the way indicated in the patent under consideration. This is exactly the procedure set out in point 2.4.3 above. Therefore, this decision cannot, in the Board's judgment, support the Appellant's allegation that the examination of inventiveness should be performed without regard to any technical problem that the claimed invention sets out to solve.

2.5 Using the above approach of the Boards, and having regard to the cited state of the art, in this case the Board considers that, if the claimed compounds were to be assumed not to have any technically useful property, then it could be postulated that the technical problem which is solved by the claimed compounds (or, in other words, the technical result achieved by them, on the basis of which the question of inventive step has to be

decided), would be the minimalist one in such a situation, namely the mere provision of further (or alternative) chemical compounds as such, regardless of their likely useful properties.

- 2.5.1 Although the Board is not convinced that, in the absence of any technically useful properties, the claimed compounds could be regarded as being a technical invention at all (see decision T 22/82 ,OJ EPO 1982, 341, No. 6 of the reasons, where it was held that a chemical compound was not patentable merely because it potentially enriched chemistry, and that structural originality had no intrinsic value or significance for the assessment of inventive step as long as it did not manifest itself in a valuable property in the widest sense, an effect or an increase in the potency of an effect), the Board has nevertheless examined whether the notional person skilled in the art would have considered the claimed compounds as a solution of such a hypothetical "technical problem".
- 2.5.2 In this context, the Appellant submitted that the skilled person would have faced thousands of possibilities of solving this problem, since even on the basis of known starting compounds and known synthetic methods, a practically unlimited number of chemical compounds would have had to be considered, and that a particular selection from this unlimited number of possibilities should be regarded as inventive, even if it was arbitrary, unless there was a direct pointer to the preparation of just these very compounds in the state of the art.
- 2.5.3 This argument must, however, fail, since in the Board's judgment the answer to the question as to what a person skilled in the art would have done depends on the result he wished to obtain, as explained in point 2.4.2 above.

If this result is only to be seen in obtaining further chemical compounds, then all known chemical compounds are equally suitable as the starting point for structural modification, and no inventive skill needs to be exercised in selecting, for instance, the compound of formula XIV of D3 for this purpose. Consequently, all structurally similar chemical compounds, irrespective of their number, that a skilled person would expect, in the light of the cited prior art, to be capable of being synthesised, are equally suitable candidates for solving such a hypothetical "technical problem", and would therefore all be equally "suggested" to the skilled person. It follows from these considerations that a mere arbitrary choice from this host of possible solutions of such a "technical problem" cannot involve an inventive step (see also e.g. T 220/84 of 18 March 1986, No. 7 of the reasons). In other words, the Board holds that, in view of the underlying general legal principle set out in point 2.4.2 above, the selection of such compounds, in order to be patentable, must not be arbitrary but must be justified by a hitherto unknown technical effect which is caused by those structural features which distinguish the claimed compounds from the numerous other compounds. This consideration is also in line with a number of previous decisions of the Boards of Appeal of the EPO, such as for example decision T 01/80 (OJ EPO 1981, 206, No. 6 to 8 of the reasons). In the case T 119/82 (OJ EPO 1984, 217), where in considering the argument that a person skilled in the art would neither consider nor propose an alternative process for preparing a known product which is "exotic" or even disadvantageous, the deciding Board reached a similar conclusion, holding that a chemical process was not obvious only when the skilled person would have seen all

its advantages, but also when he could clearly see its disadvantages or would not expect any improvement, provided that his assessment of the totality of the consequences was indeed correct (see reasons No. 16).

2.5.4 It follows directly from these considerations that a technical effect which justifies the selection of the claimed compounds must be one which can be fairly assumed to be produced by **substantially all** the selected compounds (see also e.g. T 131/87 of 7 September 1989, No. 8 of the reasons, T 742/89 of 2 November 1992, No. 7.4 of the reasons, T 626/90 of 2 December 1993, No. 4.3.2 of the reasons, and T 741/91 of 22 September 1992, No. 4.2 and 4.3 of the reasons).

2.6. Therefore, the Board holds that, contrary to the Appellant's submission, the assessment of the technical contribution to the art must take account of the actual technical reason for providing the very compounds now being claimed, as distinct from the host of other theoretically possible modified chemical compounds. In this respect, the description (see page 3, lines 1 and 2) asserts that all claimed compounds do have herbicidal activity. Herbicidally active chemical compounds which are structurally similar to the claimed ones, since they are also triazole derivatives, are known from D3, D7 and D8 (see point 2.3.1 and 2.3.2 above). Any one of these documents may therefore serve as the "closest state of the art" in the present case.

In view of this state of the art the technical problem which the present patent application **asserts** to solve is the provision of further (alternative) chemical compounds with herbicidal activity.

However, in the light of the Board's finding in point 2.4.3 above, **this technical problem could only be taken into account if it could be accepted as having been solved**, i.e. if, in deciding the issue under Article 56 EPC, it would be credible that substantially all claimed compounds possessed this activity (see also point 2.5.4 above). Accordingly, the Board has examined whether this requirement is fulfilled.

2.6.1 According to the Appellant's submission, in a case such as this one, where the credibility of the alleged herbicidal activity is at issue, the burden of proof that the presence of the alleged herbicidal activity is **not** credible rests on the EPO, here upon this Board of Appeal. This submission is clearly contrary to the legal principle that any one who alleges a fact has the onus of proving his allegation (in these proceedings to the standard of the balance of probabilities) by appropriate evidence (see T 219/83, OJ EPO , No. 12 of the reasons, fourth paragraph, and T 20/81, OJ EPO 1982, 217, No. 3 of the reasons, last paragraph). Thus, if neither the Examining Division nor the Board of Appeal is in the position to discharge this burden to the above or to any other standard, and if it is evident that the number of compounds claimed is such that it is **inherently unlikely** that all of them, or at least substantially all of them, will possess the promised activity, then the burden of proof of that fact, i.e. the possession of that activity, can indeed rest only upon the shoulders of the person alleging it.

2.6.2 In the present case, the Appellant's submission that the test results contained in the description show that **some** of the claimed compounds are indeed herbicidally active, cannot be regarded as sufficient evidence to lead to the inference that substantially **all** the claimed compounds possess this activity. The reason for this is that there

is no proven common general knowledge to show that the type of substituent that may be present in the claimed compounds would be irrelevant to the existence of the alleged herbicidal activity. On the contrary, the Board accepts the Appellant's own submission that the structural differences between the compounds disclosed e.g. in D3, D7 and D8 on the one hand, and the claimed compounds on the other hand, are such that a person skilled in the art would have been unable to predict on the basis of his common general knowledge that the claimed compounds would have herbicidal activity (see No. V above), and that it can therefore be accepted as undisputed common general knowledge that even small structural modifications may cause major differences in biological activity. Nevertheless, it is also well accepted that the properties of chemical compounds do indeed largely depend on their chemical structure, and that a skilled person would therefore normally expect that the properties of two compounds would become the more similar the more similar their chemical structures became (see decision T 181/82, OJ EPO 1984, 401, No. 5 of the reasons). In view of all the above considerations, the Board finds that reasonable predictions of relations between chemical structure and biological activity are in principle possible, but that there is a limit beyond which no such prediction can be validly made.

- 2.6.3 In the Board's judgment, this limit has to be established on the basis of the available facts and the evidence submitted for this purpose in each particular case. However, if the only evidence available is the common general knowledge, then this common general knowledge must be the same as that applicable to the question as to whether or not the skilled person would have expected a certain biological activity in view of the existence of structurally similar chemical compounds

having the same biological activity (see also T 964/92 of 23 August 1994, reasons No. 2.8). Therefore, if additional evidence is necessary in order to establish that an alleged prediction of a relationship between activity and structure is not obvious, but nevertheless reasonable, then such evidence cannot form part of the undisputed common general knowledge, but must specifically relate to a particular case.

2.6.4 For this reason, the Appellant's general statements that sometimes structural modifications were of little influence on biological activity, for example, if a part of the compound would be eliminated during an intended application based on the alleged biological activity (see point V above), cannot help the Board to answer the question as to the reasonable predictability of the biological activity in the present case. This could have been remedied by evidence that the alleged elimination did actually occur during the application of the claimed compounds. However, such evidence was not submitted. It also follows from the above considerations that even if some other patents, as submitted by the Appellant during the appeal proceedings, had been granted with claims containing broad definitions such as "optionally substituted", this is of no relevance to the present case.

2.6.5 In the tests which are reported on pages 37 to 40 of the description a great number of compounds were used. However, in all these compounds  $R^1$  was always either unsubstituted phenyl or 2-pyrimidinyl optionally substituted by methyl groups and  $R^3$  was always phenyl substituted by halogen atoms or methyl groups. Thus, despite of the number of tested compounds, these test results do not support the alleged herbicidal activity of compounds in which e.g. the phenyl ring in position  $R^3$  may be substituted by absolutely everything, having



regard to the common general knowledge relied upon by the Appellant himself, namely that the influence of structural modifications on the desired herbicidal activity is unpredictable.

- 2.6.6 Such an allegation is likewise not supported by the content of documents D3, D7 and D8, which all disclose classes of herbicidally active compounds with limited substitution possibilities (see point 2.3.1 and 2.3.2 above).
- 2.6.7 The Appellant had been informed about the insufficiency of the evidence submitted by him in the present case, and had also been given ample opportunity either to restrict his claims to such a group of compounds for which the Board was prepared to accept the credibility of their alleged herbicidal activity (see point III above), or to provide further evidence, either by test results or by other means, that in the present case the kind of substitution of the phenyl ring R<sup>3</sup> is not relevant to the herbicidal activity. Despite these clear and helpful leads, which the Board was not obliged to afford, neither appropriate amendments nor further evidence were forthcoming.
- 2.7 For these reasons, and on the basis of what evidence there is in the case, the Board is not satisfied that substantially **all** compounds now being claimed are likely to be herbicidally active. Since, as set out above in points 2.4.2, 2.5.4 and 2.6, only those of the claimed chemical compounds could possibly involve an inventive step which could be accepted as solutions of the technical problem of providing further **herbicidally active** compounds, the subject-matter of the main request extends to compounds which are not inventive and therefore does not meet the requirement of Article 56 EPC.

- 2.8 Since the Board has indicated, in points III and 2.6.7 above, that it would have been prepared to accept the presence of an inventive step on the basis of a limited number of the claimed compounds possessing the promised activity, whereas the decision under appeal found that the herbicidal activity of these compounds would have been expected by the skilled person, the Board finds it appropriate to make the following observations:
- 2.8.1 The statement in the decision under appeal that a skilled person would have inferred from the combined disclosure of the above documents that the "biophore", i.e. the structural element which is responsible for the desired activity, is the 1,2,4-triazole ring bearing substituents (of any kind) in positions 1, 3 and optionally 5 is, in the Board's judgment, the result of an ex-post-facto analysis of the content of the above documents. It takes a part of the content of these documents out of its context and generalises it on the basis of knowledge only derivable from the present patent application.
- 2.8.2 Furthermore, the concept of "bioisosterism", relied upon in the decision under appeal, according to which it was alleged to be common general knowledge that the replacement of a carbamoyl group in a biologically active chemical compound by a sulphamoyl group did not alter the quality of the biological activity, is in the Board's judgment not applicable to all such replacements with a sufficient degree of certainty. The Board therefore has serious doubts that it was "obvious to try" this replacement with a reasonable expectation of obtaining further compounds having herbicidal activity.

3. Auxiliary requests 1 to 4

Claims 1 of claims sets "B" to "E", dated 27 October 1994, corresponding to auxiliary requests 1 to 4, all contain the expression "optionally substituted phenyl" as a definition of R<sup>3</sup>. Therefore, these requests also relate to subject-matter which is not inventive.

4. For these reasons the appeal cannot be allowed on the basis of any one of the sets of claims submitted by the Appellant for consideration by the Board of Appeal, and it is now necessary to consider the questions which the Appellant has submitted for referral to the Enlarged Board of Appeal.

4.1 Regarding the first of these questions, namely whether, if the closest approach to the prior art is deemed unobvious, a more distant approach can nevertheless be obvious, it follows from the considerations set out in points 2.5.3 to 2.5.5 above that this question is of little or no relevance to the question of inventive step in the present case, since here the presence or absence of an inventive step does not depend on the structural similarity that the claimed compounds may or may not have with any known chemical compound, but depends on whether or not a specific **technical effect**, namely herbicidal activity, can be reasonably ascribed to the whole spectrum of chemical structures covered by the present claims, or only to a part of this spectrum. It is therefore of no relevance here whether other cases may exist, where inventiveness may follow solely from a particular "structural distance" of the claimed subject-matter from the closest state of the art (see however point 2.5.1 above). In any case, it follows from the above considerations that the answer to the Appellant's first "question of law" depends upon the facts of the particular case, so that no general answer can be given.

Consequently, this question cannot be one of law, let alone an important one, but is one of fact, so that it is incapable of being referred to the Enlarged Board of Appeal pursuant to Article 112(1) EPC (see also decision T 845/90 of 13 December 1991, Reasons No. 2.3).

- 4.2 In respect of the second question, the Board has no doubts that common general knowledge, when cited by an instance of the EPO, has to be established by it, if it is in dispute, as explained in point 2.3 above. However, the common general knowledge relied upon by the Board in the present case was the one relied upon by the Appellant himself, see point 2.6.2 above, and so cannot, by definition, be in dispute.
- 4.3 For these reasons, the Board holds that neither of the above questions should be referred to the Enlarged Board of Appeal.

#### Order

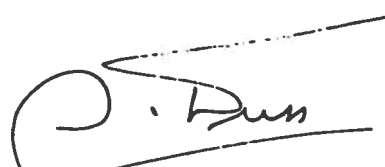
For these reasons it is decided that:

1. The appeal is dismissed
2. The requests for referral to the Enlarged Board of Appeal are refused.

The Registrar:

  
E. Gorgmaier

The Chairman

  
A. Nuss