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* **IN THE HIGH COURT OF DELHI AT NEW DELHI**

% *Date of decision: 11th November, 2022*

\+ CS(COMM) 348/2022 & I.A. 15833/2022, 17122/2022

FMC CORPORATION & ORS. ..... Plaintiffs

Through: Mr. Sandeep Sethi, Senior Advocate with Dr. Sanjay Kumar, Ms. Arpita Sawhney, Mr. Arun Kumar Jana, Ms. Meenal Khurana, Mr. Harshit Dixit and Mr. Priyansh Sharma, Advocates with Dr. Vikrant Arun Adsool, Expert.

versus

INSECTICIDES INDIA LIMITED ..... Defendant

Through: Mr. Guruswamy Nataraj and Mr. Shashikant Yadav, Advocates.

CORAM:
HON'BLE MS. JUSTICE JYOTI SINGH

JUDGEMENT

JYOTI SINGH, J.

I.A. 8126/2022 (under Order XXXIX Rules 1 and 2 CPC, by Plaintiffs)

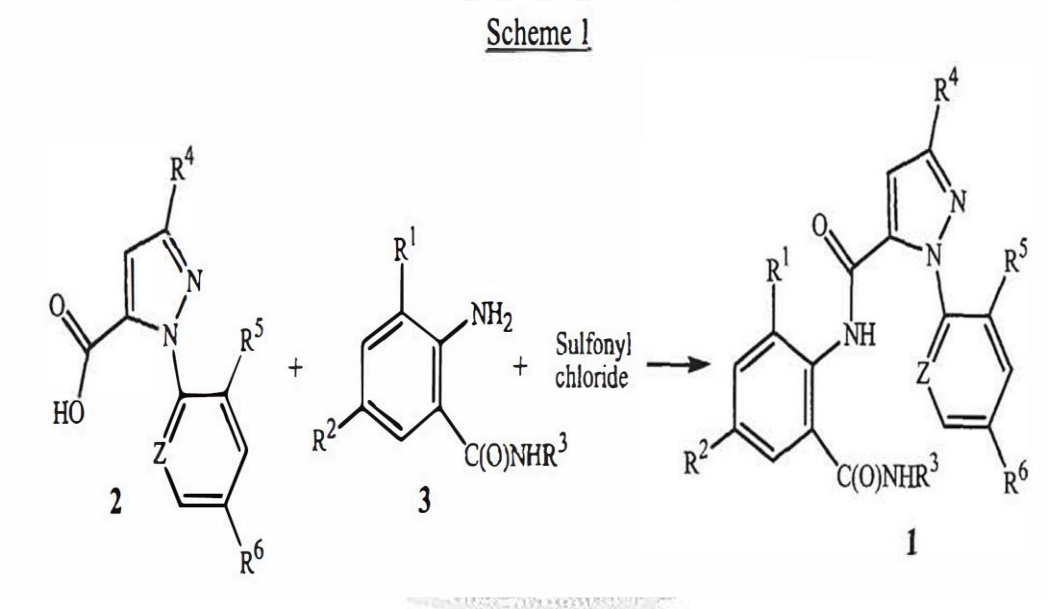
1. This judgment shall dispose of the present application filed by the Plaintiffs under Order XXXIX Rules 1 and 2 CPC. The suit out of which the application arises has been filed seeking a decree of permanent injunction against the Defendant and those acting on its behalf *inter alia* from infringing the patent rights of the Plaintiffs under Indian Patent No. 298645 (IN'645), by using directly or indirectly any process(s) covered by the said patent granted by the Controller of Patents, in favour of the Plaintiffs on 06.12.2005.

2. It is averred in the plaint that E.I. DU PONT DE NEMOURS AND COMPANY, a US based company, was granted the suit patent IN 298645 (IN '645) on 09.07.2018 under Section 43 of the Patents Act, 1970 (hereinafter referred to as the 'Act') titled 'METHOD FOR PREPARING N-PHENYLPYRAZOLE-1-CARBOXAMIDES'. By a confirmatory Assignment Agreement dated 01.05.2018, rights in the suit patent were assigned in favour of the Plaintiffs with effect from 01.11.2017 and the patent is currently valid and subsisting. The date of expiry of IN'645 is 06.12.2025 and indisputably, no pre-grant and/or post-grant opposition or revocation petition has been filed against IN'645, which fortifies the quality and strength of the suit patent.

3. From the narrative in the plaint, the factual score is that Plaintiff No. 1/FMC Corporation is a Company incorporated under the laws of the State of Delaware, United States of America, and Plaintiff No. 2/FMC Agro Singapore Pte. Ltd., is a Company registered under the laws of Singapore. Founded in 1883, Plaintiff No. 1 is engaged in the production and sale of chemicals including agrochemicals for more than a century and provides innovative and cost-effective solutions for enhancement of crop yield and quality by controlling a broad spectrum of insects, diseases etc., as well as in non-agricultural markets for pest control. It carries on business in several parts of the world. By virtue of the Assignment Agreements, each of the Plaintiffs is registered and recorded as patentee of the suit patent in the Register of Patents and conduct their agrochemical business in India through Plaintiff No. 3, which holds license to import and market the final product, 'Chlorantraniliprole' (CTPR).

4. IN'645, the suit patent, relates to a novel method for preparing anthranilic diamide insecticide compounds and a total of 12 claims

have been granted in the suit patent. IN'645 discloses and claims *inter alia*, a method for preparing a compound of Formula 1 including CTPR, in particular claim 1. The said method involves combining (1) a carboxylic acid compound, (2) an aniline compound and (3) a sulfonyl chloride, to prepare or manufacture CTPR. Thus, in the patented method, a pyrazole carboxylic acid of Formula 2, an aniline of Formula 3 and sulfonyl chloride are combined (contacted) to prepare CTPR. The process of invention is depicted as follows:



5. It is further averred that from a document titled 'Environmental Impact Assessment Report and Environment Management Plan' ('EIAR & EMP'), pertaining to environmental clearance, submitted by the Defendant to the Ministry of Environment, Forest and Climate Change, Government of India, Plaintiffs learnt of the process adopted by the Defendant for synthesis of CTPR and a bare perusal of the same reflects that Defendant is employing the patented method, claimed by claims 1, 5 to 8 and 11 to prepare an identical product CTPR, thereby infringing the process of the suit patent. The scheme of synthesis of CTPR, as disclosed at internal page A-37 of the said Report and as brought forth in the plaint, is as follows:

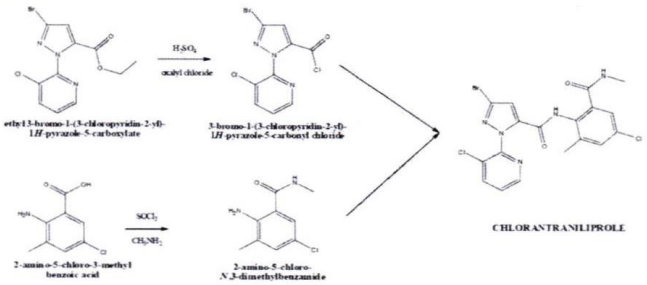
5. Chloranthraniliprole

Manufacturing Process:

Charge dichloroethane, ethyl 3-bromo-1-(3-chloropyridin-2-yl)-1H-pyrazole-5-carboxylate (EBCPPC) and catalyst sulphuric acid. Rise to 55°C and add oxalyl chloride for 3 hours. Rise to reflux and reflux for 3 hours. It contains 3-bromo-1-(3-chloropyridin-2-yl)-1H-pyrazole-5-carbonyl chloride (BCPPCC) in dichloro ethane, say Mass 1.

Charge dichloro ethane and 2-amino-5-chloro-3-methyl benzoic acid (ACMBA). Rise to 55°C and add thionyl chloride for 2 hours. Rise to reflux and reflux for 4 hours. Cool to 20°C and pass methylamine for 4 hours. Rise to reflux and reflux for 2 hours. Cool the mass of 2-amino-5-chloro-N, 3-dimethyl benzamide (ACDMB) in dichloro ethane to 30°C. Add Mass 1 slowly for 3 hours and maintain for 2 hours. Add water and separate the aqueous phase. Cool the organic phase to 5°C and maintain for 1 hour. Filter the slurry and dry the wet cake to obtain Chlorantraniliprole technical.

Chemical Reaction:



A-37

6. On 23.05.2022, summons were issued to the Defendant in the suit and on the said date, while seeking time to file reply to the present application, learned counsel for the Defendant, on instructions, had stated that the Defendant does not intend to launch the product CTPR until the expiry of patents IN'307 and IN'332, which were expiring on 13.08.2022 and would launch the product post expiry of the said patents, using a process which does not infringe the suit patent IN'645.

7. The contentions raised on behalf of the Plaintiffs, as eloquently articulated by learned Senior Counsel for the Plaintiffs, are as follows:

A. Present application was earlier listed before this Court on 12.09.2022 and was being heard along with I.A. 8130/2022 in CS(COMM) 349/2022. On the said date, learned counsel for the Defendant had stated that Defendant did not wish to file a reply to the present application and shall adopt the reply filed in I.A. 8130/2022. In fact, common written statement was filed by the Defendant herein and the Defendant/Natco Pharma Limited in CS(COMM) 349/2022 and therefore, it is not open to the Defendant to urge additional/different points in response to the present application. On 19.09.2022, while passing the order in I.A.8130/2022, this Court had observed that the process of manufacture of CTPR by the Defendant herein is different from the NATCO process and thus, the present application deserves to be allowed on this short ground.

B. Defendant/Insecticides India Limited is guilty of infringing the suit patent IN'645. The impugned manufacturing process disclosed by the Defendant is 'equivalent' to the process claimed in IN'645. 'Doctrine of Equivalents' postulates that even if the accused product or process does not literally infringe the patented invention, it may still be found to infringe under the Doctrine of Equivalents, if it can be proved that an element of an accused product or process and a claimed element of patented invention are found to be literally equivalent. In other words, a patentee can claim rights to inconsequential alterations to the thing patented even though not literally covered by the original claims, but

which can be achieved with little effort, thereby expanding the protection available to an inventor for his invention and prevents a person from playing fraud on a patent by substituting obvious equivalents for elements in the claims in order to avoid literal language.

C. This Court in ***Sotefin SA v. Indraprastha Cancer Society and Research Center and Others, 2022 SCC OnLine Del 516***, observed that in order to determine infringement, it is imperative to reach a finding that all the essential elements of the suit patent are present in the infringing process. In the said case, the Court relied on 'Pith and Marrow Doctrine' also known as the 'Doctrine of Purposive Construction' along with Doctrine of Equivalents to examine if the substituted element in the infringing product does the same task, in substantially the same way, to accomplish substantially the same result. Reliance was placed on the judgment in ***Raj Parkash v. Mangat Ram Chowdhry & Others, 1977 SCC OnLine Del 33,*** wherein it was held that a minor variation cannot be treated as a shield from piracy. The Court relied on the judgment of the Supreme Court of Canada in ***Free World Trust v. Electro Sante Inc., (2000) 2 SCR 1024,*** wherein it was held that non-essential elements may be omitted or substituted but that too would not shield infringement. In view of these settled propositions of law, it was submitted that the correct standard to apply for determining infringement is whether the Defendant's entire process, taken as a whole, is equivalent to the claimed process of IN'645. There cannot be a discussion

or differentiation with respect to the differences between thionyl chloride or oxalyl chloride and sulfonyl chloride to set up a defence against infringement, as is sought to be done by the Defendant.

D. A total of 12 claims have been granted by the suit patent IN'645. The suit patent discloses and claims *inter alia* a method for preparing a compound of Formula 1 including CTPR, in particular claim 1. The said method comprises combining (1) a carboxylic acid compound, (2) an aniline compound and (3) a sulfonyl chloride, to prepare and manufacture CTPR. Thus, in the patented method, a pyrazole carboxylic acid of Formula 2, an aniline of Formula 3 and sulfonyl chloride are combined (contacted) to prepare CTPR. Page 6, last paragraph of IN'645 discloses that "*this invention relates to a method for preparing compounds of Formula 1 by coupling carboxylic acids of Formula 2 with anthranilamides of Formula 3 using the sulfonyl chloride, typically in the presence of a base and a solvent."* In the method claimed in IN'645, sulfonyl chloride compound is used to facilitate coupling of carboxylic acids and the anilines to form N-phenylpyrazole-1-carboxamides. Furthermore, IN'645 discloses in first paragraph on Page 8 that "*it has been discovered that the particular stereo-electronic profiles of the compounds of Formulae 2 and 3 facilitate obtaining remarkably high yields of compounds of Formula 1 using the present method*."

E. Referring to the method of claim 1 in IN'645, which is simply combining carboxylic acid compound of Formula

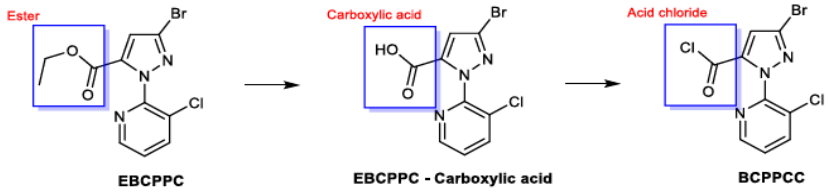
2 with an aniline compound of Formula 3 and a sulfonyl chloride to form the compound of Formula 1, it is clear that the sequence of process or chemical route is of no consequence in the said method. Defendant is deliberately and wrongly attempting to introduce limitations into Claim 1 of the suit patent, which do not exist. There is no base mentioned in Claim 1 and certainly no limitation with respect to the sequence of how the reactants are to be combined. Defendant is wrongly interpreting and misreading claim 1 of the suit patent. The argument that one is required to focus on the combination of the reactants as a distinguishing feature of Defendant's process, is an untenable argument in the present case. As is evident, the method of claim 1 of suit patent does not require the three components to be added in a particular order and the reactants can be combined in a variety of orders, such as, combining sulfonyl chloride with the carboxylic acid of Formula 2 to form a mixture and then combining the mixture with aniline of Formula 3.

F. Claim 1 is intended to encompass a combination of reactants in variety of orders and completely encompasses the steps of Defendant's process, thereby infringing the suit patent. The document titled 'Environmental Impact Assessment Report and Environment Management Plan', pertaining to environmental clearance submitted by the Defendant to the Government of India discloses synthesis of CTPR in a process, which squarely falls within claim 1 of IN'645.

Indisputably, the final product in the Defendant's process is CTPR. Combination of 'Mass 1' and 'Mass 2' corresponds directly with the claimed step of combining carboxylic acid compound of Formula 2 and aniline compound of Formula 3 of claim 1 of IN'645 as follows:

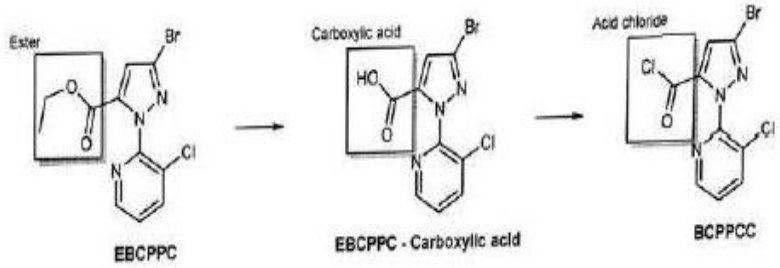
> ***"The reaction scheme disclosed by the Respondent in "Environmental Impact Assessment Report and Environmental Management Plan" ("EIAR and EMP") is inaccurate and misleading, as it fails to disclose 3-Bromo-1-(3-Chloro-2-pyrindinyl)-1H-pyrazole-5-carboxylic acid:"***

G. The reaction scheme described on internal page A-37 of EIAR & EMP is inaccurate and not feasible and it is for this reason that Defendant is not disclosing the entire process, despite an application filed by the Plaintiffs seeking interrogatories. For transformation of 'EBCPPC' to 'BCPPCC' described in EIAR & EMP, the process would have to proceed *via* the corresponding carboxylic acid, namely, 3-Bromo-(3-Chloro-2-pyridinyl)-1H-pyrazole-5-carboxylic acid, before it reacts with oxalyl chloride to form the acid chloride in 'BCPPCC', as follows:



In this regard, reference be made to the affidavit filed by Dr. Vikrant Arun Adsool, which is in the following terms and to which no rebuttal has been filed by the Defendant:

"8. The chemistry described for the transformation of 'EBCPPC' to 'BCPPCC' in the document titled 'Environmental Impact Assessment Report and Environmental Management Plan' submitted by submitted by Insecticides India Limited (IIL) to the Ministry of Environment, Forest and Climate Change, Government of India, appears to be inaccurate. Specifically, the ester in 'EBCPPC' may first have to be hydrolyzed to the corresponding carboxylic acid before it reacts with the oxalyl chloride to form the acid chloride in 'BCPPCC' (see Scheme 1). However, neither the procedure nor the synthetic scheme provided by IIL indicate such a synthetic information. Without formation of the EBCPPC-carboxylic acid intermediate, formation of BCPPCC may not be possible. More information on this synthesis is warranted.



H. On a careful perusal of the process of the Defendant as disclosed to the Ministry, it is evident that the process involves the following stages:

(1) dichloroethane and ethyl 3-bromo-1(3-chloropyridin-2-yl)-1H-pyrazole-5-carboxylate (EBCPPC) are charged in the presence of sulphuric acid and oxalyl chloride to obtain 3-bromo-1-(3-chloropyridin-2-yl)-1H-pyrazole-5-carbonyl chloride (BCPPCC) in dichloroethane ("Mass 1");

(2) in a parallel reaction mechanism, dichloroethane and 2-amino-5-chloro-3-methyl benzoic acid (ACMBA) are charged in the presence of thionyl chloride and methyl amine to obtain 2-amino-5-chloro-N, 3-dimethyl benzamide (ACDMB) in dichloroethane ("Mass 2"); and

(3) Mass 1 and Mass 2 are coupled to obtain the product CTPR by adding water and separating the aqueous phase.

The process directly reads on the elements of combining (1) a carboxylic acid compound of Formula 2, and (2) an aniline compound of Formula 3 in claim 1 of IN'645. The only difference sought to be brought out by the Defendant is in the coupling agents oxalyl chloride and sulphonyl chloride, which is immaterial as both perform the same function to the achieve the same result. Defendant's process is, therefore, squarely covered by the Doctrine of Equivalents and infringes the suit patent.

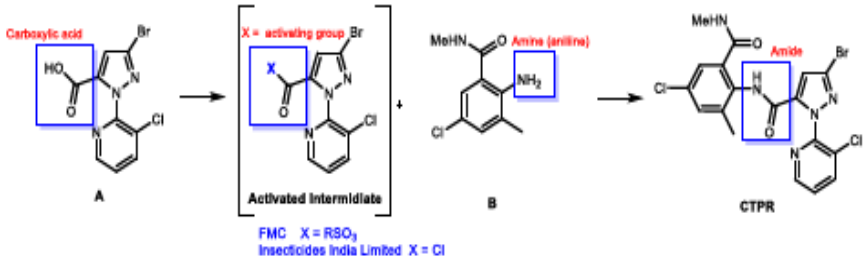
I. Applying the principle of comparison of essential features of the invention, one needs to analyse the inventive step of the invention claimed in the suit patent to determine the essential features and tested on this anvil the choice of sulfonyl chloride, as a coupling agent, is a non-essential element as the choice of coupling agent is variable in nature. This stand of the Plaintiffs is strengthened from the observation of the International Searching Authority in its written opinion on the corresponding PCT International Application No. PCT/ US/2005/044131, which is as follows:

> *"Document WO 03/015518 (D1) which is considered to represent the most relevant state of the art, discloses the preparation of compounds (I) as defined in the present claim 1 by reaction of a pyrazolecarboxylic acid with an optionally further substituted anthranilic acid in the presence of a sulfonyl chloride (D1, example 6, step D, example 8, step E) to form a benzoxazinone compound which is further treated with an amine to give the carboxamide of formula (I) (examples 6 and 8, steps E, and F respectively).*

The difference between the presently claimed process and that described in D1 resides in the use of anthranilamide 2 instead of an anthranilic acid in the above reaction, thereby directly arriving at the final compounds and avoiding the need of the ring-opening reaction of the benzoxazinone with an amine.

There is no indication in the prior art to a process for the preparation of compound (I) as defined in claim 1 involving the use of an anthranilamide 2. The claimed process therefore is considered novel and non-obvious in the light of the cited prior art."

J. The manufacturing process disclosed in IN'645 and the alleged process disclosed by the Defendant rely on activation of pyrazole carboxylic acid (A) (in this case, 3-Bromo-1-(3-chloro-2-pyrindinyl)-1H-pyrazole-5-carboxylic acid) into an activated intermediate, which reacts with an aniline compound (B) (in this case, 2-amino-5-chloro-N,3-dimethylbenzamide), to produce chlorantraniliprole (CTPR). Thus, as shown in the following scheme, the process disclosed in IN'645 and the alleged process disclosed by the Defendant are equivalent:



K. Contention of the Defendant that the two processes are different because the reagent used in Defendant's process does not include sulfonyl chloride but uses thionyl chloride and oxalyl chloride, is completely misplaced. Oxalyl chloride only serves the purpose of stoichiometric activation of carboxylic acid group of (a) 3-Bromo-1-

(3-Chloro-2-pyrindinyl)-1H-pyrazole-5-carboxylic acid which then reacts with (b) 2-amino-5-chloro-N, 3-dimethyl benzamide, to form an identical product CTPR. Thionyl chloride is used solely to make 2-amino-5-chloro-N, 3-dimethylbenzamide and does not play a role in the formation of the activated intermediate used in formation of CTPR. Oxalyl chloride is a chlorinating agent while sulfonyl chloride is a sulfonating agent, however, both facilitate coupling of carboxylic acids and the anilines to form CTPR. Defendant's process performs substantially the same function i.e. activation of carboxylic acid moiety, in substantially the same way i.e. coupling of carboxylic acid with an aniline, to achieve the same result and thus the two manufacturing processes are equivalent processes.

L. The Scientific Advisors' reports submitted in another matter in CS(COMM) No. 349/2022 cannot be considered in the present case or applied in a piecemeal manner, in view of the difference in the factual matrix in the two cases and the Terms of Reference being peculiar to the process of the Plaintiffs herein and Natco, the Defendant therein.

8. The arguments urged on behalf of the Defendant can be succinctly summed up as under:

A. IN'645 process and Defendant's process are for preparing anthranilic acid derivatives and compounds obtained include CTPR. IN'645, the suit patent, purports to cover a method for preparing N-phenylpyrazole-1-carboxamides including CTPR which are anthropodal

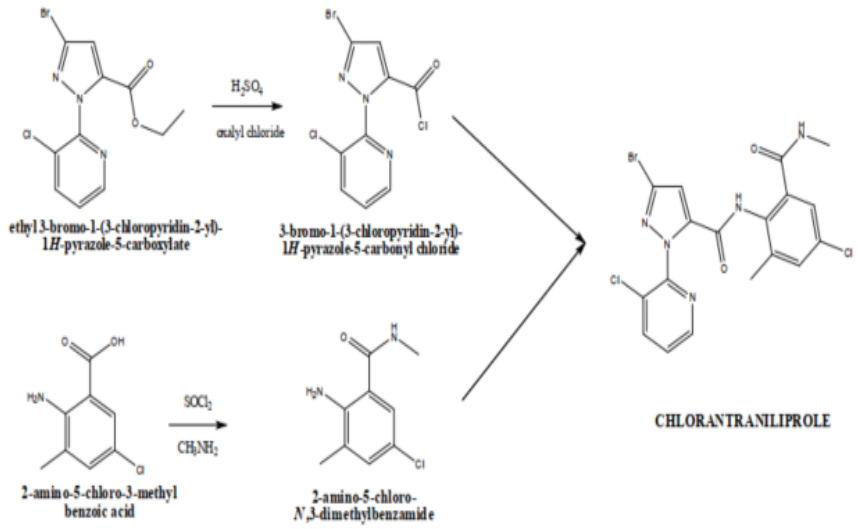
anthranilamides. It is an admitted position that CTPR and other carboxamides prepared by process of claim 1 of IN'645 are compounds that were known even before the priority date of IN'645. It is the Defendant's position that CTPR and various methods of preparation were first claimed and disclosed in IN'978, which has expired on 21.03.2021. It is the Plaintiffs' position that CTPR and its intermediates and their respective modes of preparation were first disclosed and claimed in IN'307 and IN'332 and specifically an acid intermediate, which is one of the reactants in IN'645, was first disclosed and claimed in IN'978, IN'307 and IN 215218. IN'978 has expired on 21.03.2021 while IN'307, IN'332 and IN'218 have all expired on 13.08.2022. Sulfonyl chlorides are also known much before the priority date and are regularly used for acid-amide coupling.

B. The entire focus in IN'645 through its description is only on the use of and alleged advantages obtained by the use of sulfonyl chloride. No other reagent for acid-amide coupling is even mentioned in the description of IN'645 and the preferred sulfonyl chloride is identified as methanesulfonyl chloride. The reaction scheme for acid-amide coupling is also set out in the claims and has a significance. The advantages of sulfonyl chloride according to IN'645 reside in utility for acid-amide coupling, its convenience of use, alleged less expense and the claim that it can be used to control the rate of reaction of coupling. Based on the Defendant's analysis, it is

discernible that one of the factors for high cost of CTPR is the high cost of use of sulfonyl chloride reagent.

C. Clearly, Defendant's process is non-infringing and the reasons for this assertion are many-fold. IN'645 speaks of acid-amide coupling using sulfonyl chloride, where both acid intermediate and amide intermediate are known compounds for which patent protection expired on 13.08.2022 and where the only reagent used is sulfonyl chloride. Defendant's process as illustrated in EIAR & EMP uses a three steps process as follows:

Chemical Reaction:



Therefore, not only are the starting raw materials different but the entire reaction mechanism and the steps involved are different and distinct, more particularly, the use of thionyl and oxalyl chlorides as against sulfonyl chlorides in the process of the suit patent.

D. Present matter was being earlier heard along with another suit between the Plaintiffs herein and another Defendant/NATCO being CS(COMM) 349/2022. In the said matter with the consent of the parties two Scientific

Advisors were appointed *inter alia* to determine the essential features of the suit patent which is common to both the suits. The Scientific Advisors in their Reports filed before this Court opined that the essential features covered by the suit patent comprise (a) a carboxylic acid of formula 2; (b) aniline compound of formula 3; and (c) sulfonyl chloride of formula 4. The suit patent being the same, the opinion and findings in the said Reports would clearly apply in the present case which includes finding on the essential features of IN'645, identified by the Scientific Advisors. The experts have also opined that the schemes of the suit patent are limited to a specific sequence and reactions set out in claim 1. While the Defendant may be different in the present suit but the suit patent being the common factor, the Reports of the Experts cannot be ignored for adjudication of the issue of infringement in the present case. In any event, this Court has passed a judgment on 19.09.2022 dismissing the application being I.A. 8130/2022 filed by the Plaintiff therein under Order XXXIX Rules 1 & 2 CPC and to the extent of the suit patent, the judgment squarely applies to the present case.

E. Plaintiffs have not placed any evidence or material to show equivalence between Defendant's process and the process under the suit patent, except for a self-serving affidavit of Dr. Vikrant Arun Adsool, who is an employee of the Plaintiffs and has naturally drafted the affidavit to support the stand of the Plaintiffs. Dr. Vikrant Arun Adsool was called in Court by the Plaintiffs to

assist the Court and while handing over a chart to explain the process, he confirmed that Defendant's process involves conversion of acid to acid chloride using pyrazole carboxylic acid. In this view, Plaintiffs are not entitled to claim that their process involves the same reaction of 'activation of acid to acid chloride with sulfonyl chloride prior to reaction with aniline'. Having restricted themselves to a specific process where acid is reacted directly with aniline using sulfonyl chloride as a reagent to facilitate coupling, Plaintiffs cannot resile from this position and postulate a different chemical sequence.

F. Arguments of the Plaintiffs that on account of non-disclosure of the entire process of the Defendant, adverse inference be drawn by the Court is misplaced and overlooks the provision of Section 104A(2) of the Act which categorically stipulates that Court can direct a Defendant to disclose its process only if there is sufficient reason to do so, which must be recorded in writing. The said section has been held to be applicable only if the product is novel and further it is a shield for the Defendant and not a sword in the hands of the Plaintiff ***[Ref.: Natural Remedies Private Limited and Others v. Indian Herbs Research & Supply Co. Ltd. and Ors., (O.S. No. 1/2004) dated 09.12.2011].***

G. Defendant has taken a categorical position in reply to the present application that Defendant does not use sulfonyl chloride and instead uses oxalyl chloride to convert carboxylic acid to an acid chloride which is then reacted with aniline to obtain CTPR. Since sulfonyl chloride has

been found essential to couple acid with aniline in Claim 1 of IN'645, Defendant's process which involves reaction of acid chloride with aniline without using any reagent is clearly outside the scope of every claim IN'645. Oxalyl chloride which is used to convert acid to acid chloride simply does not perform the same function or achieve the same result as sulfonyl chloride in the process under IN'645, which involves coupling of acid to aniline using sulfonyl chloride.

H. Plaintiffs have failed to establish a *prima facie* case of infringement and in light of the fact that at least two other entities namely Best Agrolife in CS(COMM) 608/2022 and Natco Pharma Ltd. in CS(COMM) 349/2022 are no longer under injunction and two experts appointed by this Court, with the consent of the Plaintiffs *albeit* in CS(COMM) 349/2022, have delineated the essential elements of the suit patent and the limitation of the sequence of reaction, which reports form part of a judicial order, balance of convenience lies in favour of the Defendant. *Albeit*, FMC/Plaintiffs have challenged the said judgment but there is no stay by the Appellate Court and the Division Bench, without even issuing notice in the appeal, has reserved orders, directing both FMC and NATCO to submit respective bill of costs. Irreparable harm and injury shall be caused to the Defendant if it is not permitted to launch CTPR absolving the Defendant from the assurance given to this Court on 23.05.2022. In any case, if Plaintiffs succeed at the end of the trial, monetary compensation and damages would be an

adequate remedy ***[Ref.: Dalpat Kumar v. Prahlad (1992) 1 SCC 719]***. Defendant undertakes that it shall maintain accounts of profits, which shall be filed in a sealed cover in this Court, on a quarterly basis to show its *bona fide*. Defendant further undertakes that it shall not use a process claimed under IN'645 or any other process, which infringes the suit patent. In view of the submissions made by the Defendant, the application be dismissed and Defendant be permitted to launch its product i.e. CTPR.

ANALYSIS

9. It is an undisputed fact and matter of record that Plaintiffs had an injunction in their favour in respect of the product patent IN 201307 (IN'307) and process patent IN 213332 (IN'332) in CS(COMM) 611/2019 with respect to CTPR, however, both patents have expired on 13.08.2022.

10. Since the present suit concerns the alleged infringement by the Defendant of the suit patent IN'645, which is a process patent, examination of the respective contentions on the aspect of infringement shall entail looking at the rival processes. In this context, a brief backdrop of the two processes is set out hereinafter.

11. **IN'645 Process:**

a) The patent was granted on 09.07.2018, titled 'METHOD FOR PREPARING **N-PHENYLPYRAZOLE-1-CARBOXAMIDES'.** A total of 12 claims have been granted in the said patent. The Bibliographic details are as follows:

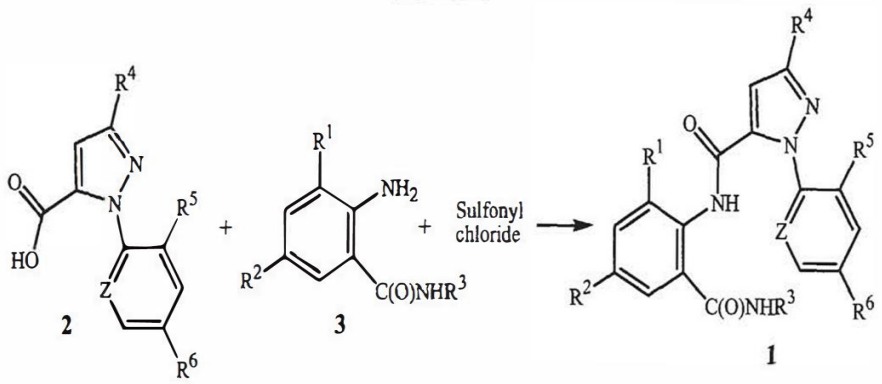
TABLE 1

Indian Patent No	IN 298645

Patent Application No.	3548/DELNP/2007
Title	Method for preparing N-PHENYLPYRAZOLE-1-CARBOXAMIDES
Applicant	E.I. DU PONT DE NEMOURS AND COMPANY
Date of filing in India	11.05.2007
International Application No.	PCT/US2005/0444131
International filing date	06.12.2005
Priority Dates	07.12.2004
WO Publication No	WO 2006/062978 A1 published on 15.06.2006
Section 11A Publication	31.08.2007 - The application was published in the official gazette issued by the Patent Office thereby being open for public to file pre-grant opposition.
Date of grant	09.07.2018
Grantee	E.I. DU PONT DE NEMOURS AND COMPANY
Section 43 (2) publication	13.07.2018 Accordingly, the timeline to file post-grant opposition on the suit patent IN'645 expired on 13.07.2019.
Date of expiry of the patent	06.12.2025
Patentee/Assignee	FMC Corporation FMC Agro Singapore Pte. Ltd. By virtue of confirmatory assignment agreement dated May 1, 2018 with effective date of November 1, 2017 assigning absolute rights in the invention of the suit patent to the Patentees i.e., Plaintiff no. 1& 2 herein, taken on record by the Indian Patent Office on August 7, 2018.

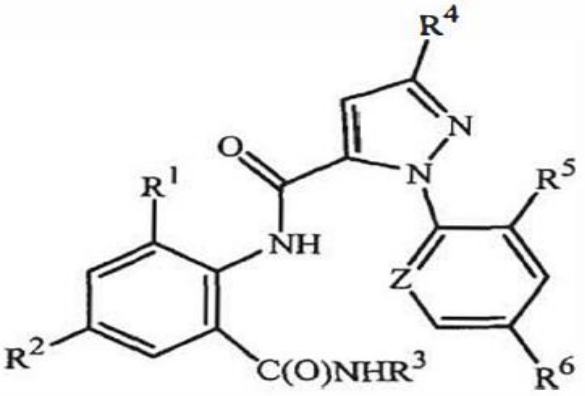
b) The process is depicted as follows:

Scheme 1



1. The patent discloses and claims *inter alia*, a method for preparing a compound of Formula 1 including CTPR, in particular Claim 1. The method combines (1) a carboxylic acid compound, (2) an aniline compound and (3) a sulfonyl chloride, to manufacture CTPR. Thus, in the patented method, a pyrazole carboxylic acid of Formula 2, and an aniline of Formula 3 and a sulfonyl chloride combine and CTPR is manufactured. Method as claimed in Claims 1, 5 to 8 and 11, which have been granted, is as follows:

   1. A Method for preparing a compound of Formula 1,



Wherein

R1 is CH_3 ……;

R2 is …. Cl,…. or CN;

R3 is ….. C1-C4 alkyl (CH_3);

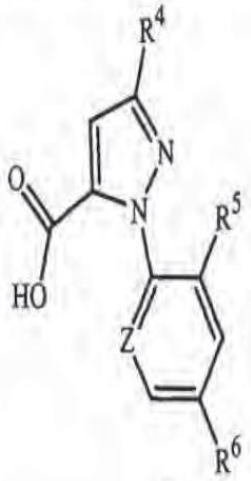
R4 is ….. Br, ……or ……;

R5 is … Cl or ….;

R6 is H, … or ….;

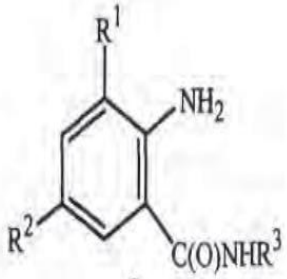
Z is ….. or N;

combining (1) a carboxylic acid compound of Formula 2,



2

(2) an aniline compound of Formula **3**,



3

and (3) a sulfonyl chloride to form the compound of Formula **1**.

5. The method as claimed in claim 4 wherein a base is combined with the compounds of Formulae 2 and 3 to form the mixture before combining with the sulfonyl chloride.

6. The method as claimed in claim 5 wherein the base is selected from tertiary amines.

7. The method as claimed in claim 6 wherein the base is selected from optionally substituted pyridines.

8. The method as claimed in claim 7 wherein the base is selected from 2-picoline, 3-picoline, 2,6-lutidine and pyridine.

11. The method as claimed in claim 10 wherein the solvent is acetonitrile.

c) Patent description explains the meaning of the term 'Combining' as 'contacting the chemicals with each other'. The written description also provides reference to various embodiments relating *inter alia*, to the sequence of addition of carboxylic acid of Formula 2 with aniline of Formula 3 and the sulfonyl chloride as follows:

"Embodiments of the present innovation include:

Embodiment M 14. ***The method wherein the carboxylic acid of Formula 2, aniline of Formula 3 and sulfonyl chloride are combined*** *at a temperature is between about - 70 and 100°C.*

Embodiment M 17. ***The method wherein the carboxylic acid of Formula 2 is combined with the aniline of Formula 3 to form a mixture, and then the mixture is combined with the sulfonyl chloride.***

> *Embodiment M 18.* ***The method of Embodiment M17 wherein a base is combined with the mixture either before or after combining with the sulfonyl chloride.***
> *Embodiment M 19.* ***The method of Embodiment M 17 wherein a base is combined with the compounds of Formulae 2 and 3 to form the mixture before combining with the sulfonyl chloride.***
>
> *Embodiment M 20.* ***The method wherein a base is combined with the compounds of Formulae 2 and 3 and the sulfonyl chloride.***
>
> *Embodiment M29. The method of Embodiment M 17* ***wherein a solvent is combined with the compounds of Formulae 2 and 3 to form the mixture before combining with the sulfonyl chloride.****"*

d) Significantly, it is noted in the detailed description that though the reactants can be combined in a variety of orders, such as combining sulfonyl chloride with carboxylic acid to form a mixture and then combining the mixture with aniline, however, for preparing the particular **N-Phenylpyrazole-1-Carboxamide** of Formula 1, the most preferable order of combination is to combine the acid and aniline to form a mixture and then combine the sulfonyl chloride with the mixture, as this order allows convenient control of the coupling process and the rate of reaction is readily controlled by simply controlling the rate of addition of sulfonyl chloride compound. It is further described that as the starting materials of Formula 2 and 3 are typically solids at ordinary ambient temperatures, the method is most satisfactorily conducted using a solvent in which the starting compounds have significant solubility and thus the method is conducted in a liquid phase comprising a solvent. It needs emphasis that the written description

also explains the role of sulfonyl chloride and notes that its compounds preferred for the present method, because of the commercial availability, include methane sulfonyl chloride and p-toluenesulfonyl chloride, though, methane sulfonyl chloride is preferred for reasons of lower cost, ease of addition and/or less waste.

12. **Defendant's Process**

a) The process relates to synthesis of CTPR. As explained by the Defendant in the EIAR & EMP, the process is in 3 steps:-

Step-I

- dichloroethane and ethyl 3-bromo-1(3-chloropyridin-2-yl)-lH-pyrazole-5-carboxylate (EBCPPC) are charged in the presence of Sulphuric Acid and oxalyl chloride to obtain 3-bromo-1-(3-chloropyridin-2-yl)-IH-pyrazole-5-carbonyl chloride (BCPPCC) dichloroethane ("Mass l").

Step-II

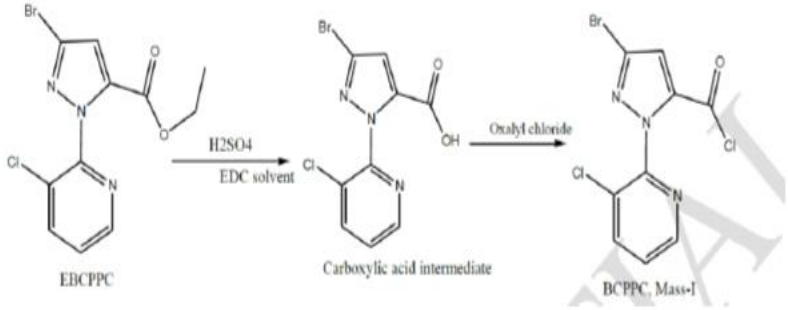
- In a parallel reaction mechanism, dichloroethane and 2-amino-5-chloro-3-methyl benzoic acid (ACMBA) are charged in the presence of thionyl chloride and methyl amine to obtain 2-amino-5-chloro-N, 3-dimethyl benzamide (ACDMB) in dichloroethane ("Mass 2").

Step-III

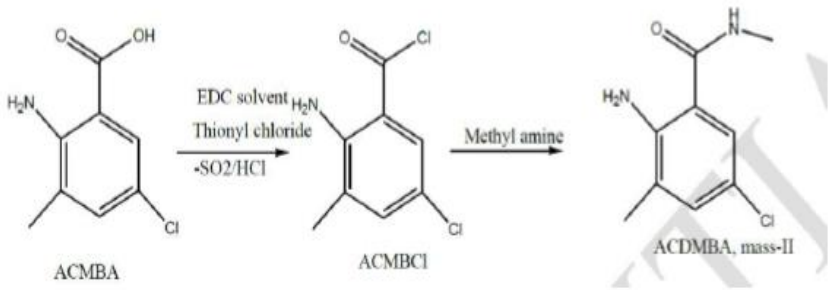
- Thereafter, Mass 1 and Mass 2 are coupled to obtain the product CTPR by adding water and separating the aqueous phase.

b) The process has been explained through a schematic representation as follows:

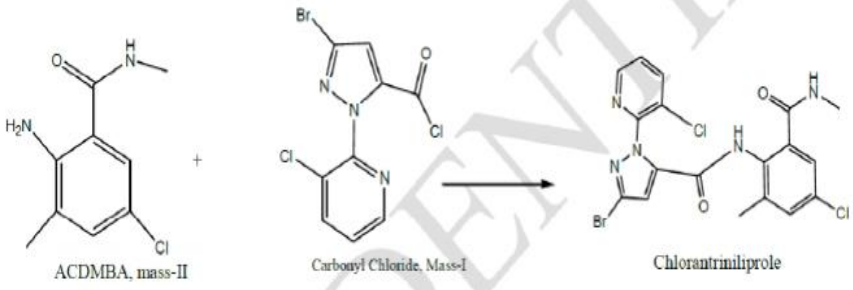
***Step-I*(Ester hydrolysis & acyl chlorination)**



***Step-II*(acyl chlorination & methylation)**



Step-III (Synthesis of Chlorantraniliprole)



13. Plaintiffs have asserted their right of enforcement of the suit patent against the Defendant under Section 48 of the Act, which provides that subject to the other provisions of the Act and conditions specified in Section 47, a patent granted under the Act shall confer upon the patentee, where the subject matter of the patent is a process, the exclusive right to prevent third parties, who do not have his consent, from the act of using that process and from the act of using, selling, offering for sale a product, obtained directly by that process. It is a settled position in the Patents law that a product claim, if granted,

confers monopoly on the patentee for the product, irrespective of the process by which the product was obtained. However, in a process claim, the monopoly is restricted to the method by which the product is manufactured and if the same product is manufactured through a different process/method, the patentee cannot extend its monopoly to the different process. It is an equally settled proposition that the scope of invention for which protection is claimed by the patentee is defined by the claims. Section 10(4) of the Act provides that specifications of a patent should fully and particularly describe the invention. Claim construction has to be done as a whole and there is also no quarrel that all essential elements of the suit patents claimed are required to be found in the infringing process to establish infringement. In order to substantiate the case of infringement against the Defendant, Plaintiffs endeavoured to map the elements of Defendant's process with the process under the suit patent.

14. Case of the Plaintiffs is primarily predicated on the Doctrine of Equivalents and it is sought to be contended that even if the Defendant's process does not literally infringe the suit patent, it may be found to infringe on the bedrock of 'equivalence'. Contention of the Defendant is that element-to-element test must be applied and tested on that anvil, in the present case there is no infringement since the reagent i.e. sulfonyl chloride, which is an essential element in Plaintiffs' process is not used in the Defendant's process. Use of oxalyl chloride and thionyl chloride in the impugned process, with a different sequence of reaction makes the process non-infringing in light of Claim No.1 being limited by the sequence of how the reactants are to be combined.

15. Insofar as the law on the subject is concerned, in my view, the same is well-settled and no longer *res integra*. I may usefully allude to

the observations in a recent decision of this Court in ***Sotefin SA (supra),*** where the Court has held that in order to determine infringement, it is imperative to reach a finding that 'all essential elements' of the suit patent are present in the infringing process. It was also held that in order to examine if the substituted element in the infringed product does the same task, in substantially the same way, to accomplish substantially the same result, the Pith and Marrow Doctrine, also known as Doctrine of Purposive Construction, needs to be applied by the Court. Reliance was placed on the judgment in ***Rodi & Wienenberger A.G. v. Henry Showell Ltd., 1966 RPC (441),*** wherein it was propounded that all essential elements of the suit patent must be found in the process alleged to be infringing. Relevant para is as follows:

> *"If the language which the patentee has used in the claims which follow the description upon its true construction specifies a number of elements or integers acting in a particular relation to one another* ***as constituting the essential features of his claim,*** *the monopoly which he obtains is for that specified combination of elements or integers so acting in relation to one another-and for nothing else.* ***There is no infringement of his monopoly unless each and every one of such elements is present in the process or article which is alleged to infringe his patent and such elements also act in relation to one another in the manner claimed.*** *The law as to the principles of construction of claims in specifications in the modern form seems to me so laid down clearly and authoritatively in the Judgment of Upjohn, L.I. in Van de Leiy v. Bamfords 20 Ltd. [1961] R.P.C. 296, which was approved by the majority of the House of Lords on appeal: [1963] R.P.C. 61."*

16. In order to avoid prolixity, I may refer to relevant passages from the judgment in ***Sotefin SA (supra),*** wherein the judgments in cases of ***Raj Parkash (supra)*** and ***Free World Trust (supra)***, have been noticed and Court has observed that for determining the question of infringement, it must be borne in mind that the non-essential or trifling variations or additions in the product would not be germane, where the

substance of the invention is found to be copied. Relevant paras are as follows:

> *"**33.** The critical question is whether the elements not found in the Smart Dollies, are essential or not, so as to construe an infringement. For determining the question of infringement, it must be borne in mind that the non-essential or trifling variations or additions in the product would not be germane, so long as the substance of the invention is found to be copied. Pure literal construction is not be adopted, rather, doctrine of purposive construction should be applied. The court shall also apply Doctrine of Equivalence to examine if the substituted element in the infringing product does the same work, in substantially the same way, to accomplish substantially the same result. On this aspect, lets first take note of the judicial precedence. In the case of Raj Prakash v. Mangat Ram, a division bench of this court held that a minor variation cannot be treated as a shield from piracy, in the following words:*
>
> > *"12. We have, therefore, to read the specifications and the claims from the point of view of the persons in the trade manufacturing film strip viewers. It is the pith and marow of the invention claimed that has to be looked into and not get bogged down or involved in the detailed specifications and claims made by the parties who claim to be patentee or alleged violaters. (See Birmingham Sound Reproducers Ld. v. Collaro Ld. and Collaro Ld. v. Birmingham Sound Reproducers Ld, 1956 RP.C 232)(2)."*
>
> ***34.** Next at para 16 it was noted that:*
>
> > *"A.I.R. 1969 Bombay 255(8), held that the main function of the court is to construe the claims (stated at the end of specifications in the patent) which are alleged to have been infringed without reference to the body of the specifications and to refer to the specification only if there is any ambiguity or difficulty in the construction of the cliams in question. He further observed that where one of the claims in respect of which infringement is alleged is wide enough to cover all methods for achieving particular result, the question is not as to the method actually followed by the plaintiffs but is whether the method followed by the defendants is covered by the claim in the plaintiff's patent. The onus as to the invalidity of a plaintiff's patent and the grounds of insufficiency of description, want of novelty, absence of inventive steps and want of utility was rightly placed on the defendants. The learned Judge further observed that in an action for infringment of patent to meet the defence under Section 29(2) read with Section 26, that the patent was invalid due to insufficiency of description, the claim in the specifications of the patent need only be as clear as the*

subject admits, and the patentee need not so simplify his claim as to make it easy for infringers to evade it."

35. *Further at para 25 and 26 it was observed as follows:*

"25. The patented article or where there is a process then the process has to be compared with the infringing article or process to find out whether the patent has been infringed. This is the simplest way and indeed the only sure way to find out whether there is a piracy. This is what was done in the hair-pin case, above-referred to, and is, indeed, always done. Unessential features in an infringing article or process are of no account. If the infringing goods are made with the same object in view which is attained by the patented article, then a minor variation does not mean that there is no piracy. A person is guilty of infringement if he makes what is in substance the equivalent of the patented article. Some trifling or unessential variation has to be ignored. There is a catena of authority in support of this view. We need not cite all those cases which were brought to our notice at the Bar. Suffice it to quote the words of Lord Denning, M. R. in Beecham Group Limited v. Bristol Laboratories Ltd. and another, 1967 (16) R.P.C. 406 (12):-

> *"The evidence here shows that in making hetacillin in the United States the defendants use a principal part of the processes which are protected here by the English patents. The importation and sale here is prima facie infringement.*
>
> *"There is a further point. A person is guilty of infringement, if he makes what is in substance the equivalent of the patented article. He cannot get out of it by some trifling or unessential variation…… On the evidence as it stands, there is ground for saying that hetacillin is medically equivalent to ampicillin. As soon as it is put into the human body, it does, after an interval, by delayed action, have the same effect as ampicillin. In these circumstances, I think there is a prima facie case for saying there was an infringement. The process is so similar and the product so equivalent that it is in substance the same as ampicillin."*

26. We have seen the viewers marketed by the defendants and the viewers produced by the plaintiff. The viewers marked and kept on record as (1), (1A) Mecorama and a fourth viewer are definitely objects produced by piracy of the plaintiff's patent. The defendants have made certain variations in its viewers but these are unessential; and what the defendants market is substantially the same thing, as was conceived by the plaintiff. By trifle variations if the effect obtained by the defendants is the same, and we hold that it is the same, then according to the rule enunciated in the Ampicillin case, referred to above, there is a clear piracy. The idea of the plaintiff which is a novelty is clearly infringed. In any case, the infringement is admitted by defendants 1 and 2. We have dealt with this matter in detail

because the defendant No. 3 has put in appearance at the last stage but does not admit infringement. Therefore, we hold that there is clear infringement of the plaintiff's patent, which we have delineated above."

36. *Reliance is also placed upon the decision of the Supreme Court of Canada in the case of Free World Trust v. Electro Sante Inc., wherein the court formed the view that non-essential elements may be omitted or substituted, but that too would not shield infringement. It summarized the issue as follows:*

*"**31.** The appeal thus raises the fundamental issue of how best to resolve the tension between "literal infringement" and "substantive infringement" to achieve a fair and predictable result. There has been considerable discussion of this issue in Canada and elsewhere, which I will discuss briefly in support of the following propositions:*

(a) The Patent Act promotes adherence to the language of the claims.

(b) Adherence to the language of the claims in turn promotes both fairness and predictability.

(c) The claim language must, however, be read in an informed and purposive way.

(d) The language of the claims thus construed defines the monopoly. There is no recourse to such vague notions as the "spirit of the invention" to expand it further.

(e) The claims language will, on a purposive construction, show that some elements of the claimed invention are essential while others are non-essential. The identification of elements as essential or non-essential is made:

(i) on the basis of the common knowledge of the worker skilled in the art to which the patent relates;

(ii) as of the date the patent is published;

(iii) having regard to whether or not it was obvious to the skilled reader at the time the patent was published that a variant of a particular element would not make a difference to the way in which the invention works; or

(iv) according to the intent of the inventor, expressed or inferred from the claims, that a particular element is essential irrespective of its practical effect;

(v) without, however, resort to extrinsic evidence of the inventor's intention.

*(f) **There is no infringement if an essential element is different or omitted. There may still be infringement, however, if non-essential elements are substituted or omitted.***

> ***32.*** *Based on the foregoing principles, I conclude that the appellant's arguments must be rejected. As stated, the ingenuity of the patent lies not in the identification of a desirable result but in teaching one particular means to achieve it. The claims cannot be stretched to allow the patentee to monopolize anything that achieves the desirable result. It is not legitimate, for example, to obtain a patent for a particular method that grows hair on bald men and thereafter claim that anything that grows hair on bald men infringes. I turn then to the first of the propositions listed above.""*

17. The principles that can be culled out from the conspectus of the aforesaid judgments, in the context of the present case involving a process patent are that the patented process has to be compared with the infringing process to find out if the patent has been infringed. This is the simplest way and indeed the only sure way to find out whether there is a piracy. Unessential features in an infringing article or process are of no account. If the infringing goods are made with the same object in view which is attained by the patented article, then a minor variation does not mean that there is no piracy. A person is guilty of infringement if he makes what is in substance the equivalent of the patented article. Some trifling or unessential variation has to be ignored and if the two processes are the same, a minor variation by the infringer will not shield him from piracy and an apt example of this was in the case of ***Beecham Group Ltd. v. Bristol Laboratories Ltd., 1967 (16) R.P.C. 406 (12),*** referred to above.

18. Useful it would be to refer to an article on Doctrine of Equivalents from a Journal of Intellectual Property Right, Vol. 12, May, 2007, Pages 314-329, stating that Doctrine of Equivalents mandates that in the absence of literal infringement, a product may be found to infringe a patented product, if it is found to be its substantial equivalent and if the proposition that the scope of a patent is limited to its literal elements is accepted, it would allow a competitor to make an

unimportant or insubstantial change to a patented invention and defeat the patent. Thus, the scope of a patent is not limited to its literal terms but embraces all equivalents to the claims described.

19. I may also allude to the judgment in ***Warner-Jenkinson Co., Inc. v. Hilton Davis Chemical Co., 520 U.S. 17 (1997)***, relevant paras of which are as under:

> *"...*
>
> *We concur with this apt reconciliation of our two lines of precedent. Each element contained in a patent claim is deemed material to defining the scope of the patented invention, and thus the doctrine of equivalents must be applied to individual elements of the claim, not to the invention as a whole. It is important to ensure that the application of the doctrine, even as to an individual element, is not allowed such broad play as to effectively eliminate that element in its entirety. So long as the doctrine of equivalents does not encroach beyond the limits just described, or beyond related limits to be discussed infra this page and 31-34, 39, n. 8, and 39-40, we are confident that the doctrine will not vitiate the central functions of the patent claims themselves.*
>
> *xxx xxx xxx*
>
> *...*
>
> *In our view, the particular linguistic framework used is less important than whether the test is probative of the essential inquiry: Does the accused product or process contain elements identical or equivalent to each claimed element of the patented invention? Different linguistic frameworks may be more suitable to different cases, depending on their particular facts. A focus on individual elements and a special vigilance against allowing the concept of equivalence to eliminate completely any such elements should reduce considerably the imprecision of whatever language is used. An analysis of the role played by each element in the context of the specific patent claim will thus inform the inquiry as to whether a substitute element matches the function, way, and result of the claimed element, or whether the substitute element plays a role substantially different from the claimed element. With these limiting principles as a backdrop, we see no purpose in going further and micromanagaing the Federal Circuit's particular word choice for analyzing equivalence. We expect that the Federal Circuit will refine the formulation of the test for equivalence in the orderly course of case-by-case determinations, and we leave such refinement to that court's sound judgment in this area of its special expertise."*

20. In ***Warner-Jenkinson Co., Inc. (supra),*** the US Supreme Court held that in cases of process patent infringement, the Doctrine of Equivalents must be applied to individual elements of the claim and an analysis of the role played by each element in the context of the specific patent claim will thus inform the enquiry as to whether a substitute element matches the function, way and result of the claimed element or whether the substitute element plays a role substantially different from the claimed element. The determination of equivalents should be applied as an objective inquiry on an element-by-element basis. Perhaps, this judgment is the only decision on the Doctrine of Equivalents pertaining to chemical processes.

21. Seen in this backdrop and examining on an element-to-element basis the first question that begs an answer is what are the 'essential' feature(s) of the process covered and claimed by the suit patent.

22. It is pertinent to mention at this stage, at the cost of slight digression, that the present application was being heard along with I.A. 8130/2022 in CS(COMM) 349/2022 between FMC Corporation i.e. Plaintiffs herein and another entity namely NATCO Pharma Limited, wherein FMC had alleged infringement of IN'645 process by NATCO. In order to reach a *prima facie* finding on the essential elements of the suit patent IN'645 as well as alleged equivalence in the two processes, Court had appointed two Scientific Advisors, with the consent of the FMC/Plaintiffs herein. Both experts rendered their respective reports and gave findings/opinions on the questions posed to them in two separate Terms of Reference. The Scientific Experts have essentially given findings on two aspects: (a) the process of manufacture of CTPR under IN'645; and (b) the impugned process of NATCO in the said patent. As noticed above by a judgment dated 19.09.2022 in ***FMC Corporation and Others v. Natco Pharma***

Limited, Court has dismissed the application for injunction filed by FMC in the said suit and the reports are part of the said judgment.

23. This Court finds no plausible reason brought forth by the Plaintiffs which prevents the Defendant herein from placing reliance on the said judgment, to the extent the observations in the judgment pertain to the process under IN'645, which is also the suit patent in the present case. There is no dispute that Plaintiffs and IN'645 are the common thread between the two suits and therefore, in my view, this Court can look into the judgment for the purpose of comparison of the process under IN'645 with the impugned process herein.

24. It is trite that for determining the question of infringement what is required to be examined and kept in the backdrop is that non-essential or trifling variations in the allegedly infringing patent process would not be germane, so long as the essential elements and the substance of the suit patent is copied. Doctrine of Equivalents needs to be applied to examine if the substituted element(s) in the infringing product does the same work, in substantially the same way, to accomplish the same result. Taking this as a Bench mark, the question that begs an answer is whether given its starting elements, sequence of reactants and use of oxalyl chloride, does the impugned process infringe the process of IN'645. Put differently, whether (a) the reagent sulfonyl chloride is critical to the novelty and functionality of the suit patent; and (b) use of oxalyl chloride is a minor/trivial change, such that Defendant's process is infringing, applying the Doctrine of Equivalents.

25. It is *prima facie* discernible from the claims set out by the Plaintiffs that IN'645 in claim 1 requires coupling of a carboxylic acid and aniline using sulfonyl chloride reagent. Lines 8-10 and 16-19 refer to prior art WO'518 and its disadvantages; embodiments M4-M20 and

M22-24, M28 and M29 only refer to sulfonyl chloride, types of sulfonyl chlorides, steps sequence and molar ratios of sulfonyl chlorides to other reactants. The bridging paragraph-Scheme-1 also only refers to sulfonyl chloride while Lines 13-29 on page 16 and 1-14 on page 17 refer to sulfonyl chloride and the reasons for choosing the specific sequence of addition for its advantages. Therefore, holistically read the claim only sets out the use of sulfonyl chloride, more particularly, methane sulfonyl chloride, as a reagent in the IN'645 process. The reaction scheme for acid-amide coupling is set out on page 8 of IN'645 and the advantages of sulfonyl chloride, as mentioned, reside in its utility for acid-amide coupling, convenience of use, less expenditure and the fact that it can be used to control the rate of reaction of coupling.

26. Learned counsel for the Defendant has alluded to the judgment in ***FMC (supra),*** to substantiate the point that sulfonyl chloride is the essential feature of the process covered by the suit patent IN'645. In my view, the issue of what are the essential features of IN'645 process stands decided in the aforementioned judgment, relevant paras of which are read as under:-

> *"24. Seen in this backdrop and examining on an element-to-element basis and also keeping in view the undisputed fact that 3-Bromo-1-(3-Chloro-2-pyridinyl)-1H-pyrazole-5-carboxylic acid and 2-Amino-5-chloro-3, N-dimethylbenzamide, used in Defendant's process for preparing CTPR are the same as claimed in the suit patent, the first question that begs an answer is what are the essential feature(s) of the process covered and claimed by the suit patent.*
>
> *25. In order to answer this question, I may refer to the Reports of the Advisors, more specifically question (ii) in the Terms of Reference (II)/ (FMC). The question as formulated is as under:*
>
> > *"ii. What are the essential feature(s) of the process covered and claimed by the suit patent IN'645?*
> >
> > a) *The answer by Prof. Bhanage, is as follows:*

> *"Reacting 2 and 3 in presence of R-sulfonyl chloride to form a compound to form final product."*

b) *The reply by Dr. Nair, is as under:*

> *"The essential features of the process covered in the suit patent IN'645 comprises combining the carboxylic compound of Formula 2 with the aniline compound of Formula 3 in the base to form a mixture and then addition of the sulfonyl chloride* $R_8S(O)^2Cl$ *of Formula 4 to the mixture in a single reactor."*

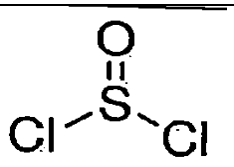
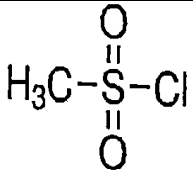
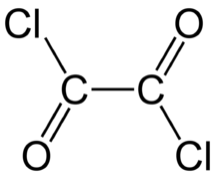
> *26. In view of the said findings coupled with the specification of IN'645 and the detailed description therein, in my prima facie view, sulfonyl chloride, more particularly, methanesulfonyl chloride is an essential and integral part of the suit patent and on this count, the stand of the Defendant is correct."*

27. Having perused the judgment in ***FMC Corporation (supra)***, the specification of IN'645 along with its detailed description, as noted in the earlier part of the judgment, in my *prima facie* view, sulfonyl chloride, more particularly, methane sulfonyl chloride, is an essential and integral part of the suit patent and the contention of the Plaintiffs to the contrary stands rejected.

28. On examination of the Defendant's process, as disclosed in EIAR & EMP, it is seen that it is a three-step process. Step-I includes two reactions: (i) hydrolysing ethyl carboxylate (EBCPPC) with sulfuric acid to get carboxylic acid intermediate; and (ii) using oxalyl chloride as reagent to convert the acid intermediate to an acid chloride (BCPPC). Step-II also has two reactions: (i) converting an amine to an amine chloride using thionyl chloride reagent in ethylene dichloride solvent; and (ii) converting the amine chloride to aniline using methyl amine. Step-III involves adding the reaction mass of Step-I i.e. acid chloride in the solvent to the reaction mass of Step-II i.e. aniline, which is still in the ethylene dichloride solvent to form CTPR, without using any reagent.

29. Therefore, it is rightly contended by the Defendant that not only the starting raw materials, sequence of reactions, steps involved in the chemical reactions, are different in the two processes, but even the essential element of IN'645 viz: sulfonyl chloride, is conspicuously absent in Defendant's process. Defendant has adopted a categorical position in the reply that it does not use sulfonyl chloride in its process and instead uses oxalyl chloride to convert carboxylic acid to an acid chloride, which is then reacted with aniline to form CTPR, which in my view, is demonstrably supported from the material on record.

30. It was emphasised on behalf of the Plaintiffs that the inventive step in the suit patent is a method of preparing amide from an amine, without the need to access the benzoxazinone intermediate form, requiring an activating agent at a very general level and in this regard oxalyl and thionyl chlorides used by the Defendant's process are equivalent. It was also urged that sulfonyl and oxalyl chlorides are both coupling agents and even if different, the difference is irrelevant. This contention of the Plaintiffs only deserves to be rejected for more than one reason. Oxalyl Chloride is an organic compound with the Formula $C_2O_2Cl_2$, with chemical and physical properties different from Sulfonyl Chloride, which is evident from a comparative chart as follows:

		
Thionyl chloride Boiling point: 79°C Melting point: -105°C Density: 1.631 g/mL at 25°C (lit.)	Methane sulfonyl chloride Boiling point: 161°C Density: 1.480 g/mL	Oxalyl Chloride Boiling point: 63-64°C Density: 1.4785 g/mL

31. In Plaintiffs' process, sulfonyl chloride is added to the mixture of Carboxylic acid, Amide, Aniline and a Base to the activate the process and thus acts as a 'coupling agent' to control the rate of reaction as well as the yield produced by it. The advantages of the reagent, according to IN'645 reside in its utility to for acid-amide coupling besides its convenience to use, low cost etc. 'Coupling agent' is a compound which provides a chemical bond between two dissimilar materials, usually organic and inorganic and aids in easy bonding with polymer chains by modifying the surface functionality of the fillers. Sulfonyl chloride has been found essential to couple acid with aniline in Claim 1 of IN'645 while oxalyl chloride is used in Defendant's process to convert acid to acid chloride and thus does not perform the same function or achieve the same result. Moreover, in IN'645 process, due to use of methane sulfonyl chloride there is formation of solid by-product methane sulfonic acid. From the aforesaid analysis and applying the principles enunciated in the judgments referred to above, this Court is of the *prima facie* view that sulfonyl chloride is an essential feature of the suit patent and use of thionyl and oxalyl chlorides in the impugned process cannot be termed as an insignificant or trivial or insubstantial change. Therefore, Defendant's process does not come under the rigors of Doctrine of Equivalents and falls outside the scope of IN'645.

32. Additionally, in ***FMC Corporation (supra)***, this Court has accepted the position that in IN'645 process, the acid, the aniline compound and sulfonyl chloride are added in a single reactor. The various embodiments, as rightly pointed out by the Defendant, have one common factor, i.e., the sequence, where the carboxylic acid of Formula 2 and aniline of Formula 3 are first mixed, whether with the base or a solvent etc. and thereafter sulfonyl chloride is added to the

mixture so obtained. In fact, emphasis on the sequence is further evident from the following:

> *"In the present method, the sulfonyl chloride is combined with the pyrazolecarboxylic acid of Formula 2 and the aniline of Formula 3. The reactants can be combined in a variety of orders, such as combining the sulfonyl chloride with the carboxylic acid of Formula 2 to form a mixture and then combining the mixture with the aniline of Formula 3.* ***However, for preparing the particular N-phenylpyrazole- 1-carboxamides of Formula 1, the most preferable order of combination has been found to comprise combining the carboxylic acid of Formula 2 with the aniline of Formula 3 to form a mixture and then combining the sulfonyl chloride with the mixture (e.g., adding the sulfonyl chloride to the mixture of the compounds of Formulae 2 and 3), because this order of the addition allows convenient control of the coupling process.*** *The rate of reaction is readily controlled by simply controlling the rate of addition of the sulfonyl chloride compound.* ***Therefore, an embodiment of note of the present method comprises the sequential steps of (1) combining a carboxylic acid of Formula 2 and an aniline of Formula 3 to form a mixture, and (2) then combining the mixture with a sulfonyl chloride. Although addition of the sulfonyl chloride to the mixture containing the aniline of Formula 2 potentially could result in undesirable side reactions, it has been discovered that the particular stereoelectronic profiles of the compounds of Formulae 2 and 3 facilitate obtaining remarkably high yields of compounds of Formula 1 using the present method." [emphasis added]"***

33. In view of the aforesaid, it cannot be urged by the Plaintiffs that the sequence of process/chemical route under IN'645 is insignificant or inconsequential. Claim 1 of the suit patent is limited by the sequence/the route of syntheses of CTPR and the impugned process which follows different sequence/method/stages of syntheses of CTPR is thus saved from the Doctrine of Equivalents.

34. Another relevant fact that is significant is that Dr. Adsool, who was produced by the Plaintiffs during the course of hearing and is an employee of the Plaintiffs, handed over a chart illustrating the Defendant's process and admitted that the Defendant's process involves conversion of acid-to-acid chloride using pyrazole carboxylic acid and it is not open therefore for the Plaintiffs to claim that their

process involves the same reaction of activation of acid-to-acid chloride with sulfonyl chloride prior to reaction with aniline. The affidavit filed by Dr. Adsool, on which great stress was laid by the Plaintiffs, states that the process disclosed by the Defendant in the EIAR & EMP, appears to be inaccurate, particularly, because the Ester EBCPPC may first have to be hydrolysed to carboxylic acid before it reacts with oxalyl chloride to form the acid chloride in BCPPCC. However, neither the procedure nor the synthetic scheme provided by the Defendant indicates such a synthetic transformation and without formation of the EBCPPC-carboxylic acid intermediate, formation of BCPPCC may not be possible. The view of the deponent in the affidavit appears to be presumptuous and speculative and significantly does not take a position that Defendant's process is equivalent to claim 1 of IN'645 and therefore infringing. At best the author's view can be construed to connote that the impugned process is not optimal. In fact, Plaintiffs have not been able to dispute the fact in this affidavit or elsewhere that the last stage reaction of acid chloride with aniline in Defendant's process does not require any reagent. Nothing has been placed on record to rebut that oxalyl and thionyl chlorides in Defendant's process and sulfonyl chloride under IN'645 have the same properties or perform the same roles in the two rival processes. Most importantly, the conclusion drawn in the affidavit is wholly incorrect. The process disclosed by the Defendant clearly evidences that Step-I involves Ester hydrolysis and acyl chlorination and carboxylic acid intermediate is formed which reacts with oxalyl chloride to form BCPPCC (Mass-1). In a parallel reaction mechanism, dichloroethane and 2-amino-5-chloro-3-methyl benzoic acid, are charged in the presence of thionyl chloride and methylamine to obtain 2-amino-5-chloro-N, 3-dimethyl benzamide (Mass-2). Step-II

therefore involves both acyl chlorination and methylation. Thereafter, in Step-III synthesis of CTPR takes place by coupling Mass-1 and Mass-2 and adding water and separating the aqueous phase.

35. This Court also finds *prima facie* merit in the submission of the Defendant that IN'645 focusses on acid-amide coupling where both the acid and amide intermediates are known compounds for which patent protection expired on 13.08.2022 and where the only reagent used is sulfonyl chloride. The product CTPR obtained at the end of process of claim 1 in IN'645 is not new since it is already known and was disclosed and claimed in IN'978 and again in IN'307, both of which were published before the priority date of IN'645.

36. Plaintiffs have, therefore, in my *prima facie* view have been unable to discharge the burden of proving that the Defendant's process is equivalent to the process under the suit patent and therefore, no case of infringement is made out. Balance of convenience lies in favour of the Defendant. It also needs to be noted that two other entities namely, Best Agrolife and Natco Pharma Limited have already launched their products in the market which itself militates against the grant of an interim injunction in favour of the Plaintiffs. There is also merit in the contention of the Defendant that since the production in question is an insecticide, the crucial season for using the said product is between September to December in the kharif season coupled with the fact that the product patent IN'307 has expired on 13.08.2022. Therefore, the Defendant deserves to be absolved from the assurance given to this Court against launching the product CTPR.

37. Reliance placed on the judgment in ***Raj Prakash (supra)*** by the Plaintiffs is misplaced, as in the said judgment, the settled proposition of law was reiterated that if a person makes an equivalent patented article, he is guilty of infringement and trifling or unessential

variations need to be ignored. There cannot be any doubt or debate on this proposition of law. However, the said judgment will not aid the Plaintiffs as in the said case, the Division Bench of this Court found that Defendants have made variations which were unessential and were marketing a product which substantially the same as the one conceived by the Plaintiffs which is not the case in the fact of the present case.

38. In view of the aforesaid, Defendant is permitted to launch its product CTPR, with a caveat that it shall be bound by the assurance given to the Court that it will not use the process claimed under IN'645 or any other process, which infringes the suit patent IN'645. Additionally, Defendant shall keep accounts of the sales and shall file the same on an affidavit on a quarterly basis in this Court.

39. Present application is accordingly dismissed.

40. Needless to state that the observations and findings in the present judgment are only *prima facie* and shall not affect the final adjudication of the suit.

CS(COMM) 348/2022 & I.A. 15833/2022, 17122/2022

41. Sealed cover handed over by learned counsel for the Defendant during the course of the arguments be returned forthwith.

42. List for further proceedings on 11.01.2023, before the learned Joint Registrar.

JYOTI SINGH, J

NOVEMBER 11 , 2022*/shivam/rk*