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A Brand-Name Drug Company May Violate Section Two of the Sherman Act by Mislabeling a Submitted Patent in the Orange Book: An Implication from In Re Actos End-Payor Antitrust Litigation, 848 F.3d 89 (2d Cir. 2017)

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A BRAND-NAME DRUG COMPANY MAY VIOLATE SECTION TWO OF THE SHERMAN ACT BY MISLABELING A SUBMITTED PATENT IN THE ORANGE BOOK: AN IMPLICATION FROM *IN RE ACTOS END-PAYOR ANTITRUST LITIGATION*, 848 F.3D 89 (2D CIR. 2017)

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ABSTRACT

The Hatch-Waxman Act encourages generic drug companies to submit an abbreviated new drug application ("ANDA") for a generic version of a drug approved by the U.S. Food and Drug Administration ("FDA"). Nevertheless, a mechanism exists for a brand-name drug company to adjudicate a patent infringement dispute before the FDA approves an ANDA. The mechanism includes the regulatory scheme of patent information submission implemented by the FDA. 21 U.S.C. § 355(b)(1) requires that patent information be correct. False patent information destroys the objectives of the Hatch-Waxman Act. In re Actos End-Payor Antitrust Litigation, 848 F.3d 89 (2d Cir. 2017), may demonstrate a new form of false patent information, because the defendant there mislabeled the disputed patents as drug product patents rather than method-of-use patents. The mislabeling caused one generic drug company not to use a Section viii statement to speed up approval of its ANDA. As a result of the mislabeling, the marketing of generic drugs was delayed, and patients were forced to pay monopoly prices for their drugs. This Article argues that such mislabeling violates Section 2 of the Sherman Act, which criminalizes monopolization achieved through anticompetitive conduct.

INTRODUCTION

Section 2 of the Sherman Act ("Section 2") provides that "[e]very person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several States, or with foreign nations, shall be deemed guilty of a felony[.]"[1] In the pharmaceutical industry, a brand-

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1. 15 U.S.C. § 2 (2012).

name drug company[2] may violate Section 2 by simultaneously "withdrawing a successful drug from the market and introducing a reformulated version of that drug, which has the dual effect of forcing patients to switch to the new version and impeding generic competition, without a legitimate business justification[.]"[3] This violation, also known as "product hopping," has been recognized as a violation of Section 2 by the United States Court of Appeals for the Second Circuit since 2015.[4] "Product hopping" may occur when a generic-drug company files an abbreviated new drug application ("ANDA") for approval of its generic drug.[5]

The Second Circuit may have created another Section 2 violation in the context of ANDA filing in *In re Actos End-Payor Antitrust Litigation*[6] ("*Actos II*") in 2017.[7] Pursuant to *Actos II*, a brand-name drug company may be held accountable for unlawful monopolization of the market for the approved drug or an attempt to monopolize such market, because it has submitted false patent information with respect to its new drug application ("NDA").[8]

The Hatch-Waxman Act (the "Act") created the ANDA to encourage generic drug companies to create a generic version of an approved drug and to make it available in the market at a lower price.[9] In order to get approval from the U.S. Food and Drug Administration ("FDA"), an ANDA applicant must only show that its generic drug "has the same active ingredients as, and is biologically equivalent to, the [originally-approved drug or] brand-name drug."[10] The Act also provided a mechanism for a brand-name drug company to adjudicate a patent infringement issue before an ANDA is

2. A "brand-name drug company" is a company which develops a drug that has never been invented or used to treat a certain disease. *See* Jennifer E. Sturiale, *Hatch-Waxman Patent Litigation and Inter Partes Review: A New Sort of Competition*, 69 ALA. L. REV. 59, 76 (2017) (discussing risks of new drug development).

3. New York *ex rel*. Schneiderman v. Actavis PLC, 787 F.3d 638, 659 (2d Cir. 2015).

4. *See* Benjamin M. Miller, *Product Hopping: Monopolization or Innovation?*, 22 B.U. J. SCI. & TECH. L. 89, 91 (2016); *but see* Gregory Day, *Innovative Antitrust and the Patent System*, 96 NEB. L. REV. 829, 856 (2018) (discussing the Third Circuit case Mylan Pharm. Inc. v. Warner Chilcott Pub. Ltd. Co., 838 F.3d 421 (3d Cir. 2016) as an opposite view to the Second Circuit).

5. *See* Alexis S. White, Note, *Is "Product Hopping" Anti-Competitive or Fair Game?: A Look at the Second and Third Circuit Divisions in Actavis PLC and Mylan Pharmaceuticals*, 10 BIOTECHNOLOGY & PHARM. L. REV. 39, 39–40 (2017).

6. *See generally In re* Actos End-Payor Antitrust Litig. (*Actos II*), 848 F.3d 89 (2d Cir. 2017) (vacating the district court decision which granted the defendant's motion to dismiss, because the plaintiff plausibly alleged that but for the false patent information submitted by the brand-name drug company, the entry of the generic drug would not have been delayed).

7. *See* Steve D. Shadowen, *Causation Principles in Pharmaceutical Antitrust Litigation*, 27 COMPETITION: J. ANTI., UCL & PRIVACY SEC. CAL. L. ASSOC. 29, 35 (2018).

8. *See Actos II*, 848 F.3d at 100–01.

9. *See* Apotex, Inc. v. Thompson, 347 F.3d 1335, 1338 (Fed. Cir. 2003) (describing the background of the Hatch-Waxman Act).

10. Caraco Pharm. Labs., Ltd. v. Novo Nordisk, 566 U.S. 399, 405 (2012).

approved by the FDA.[11] The mechanism included the regulatory scheme implemented by the FDA to manage patent information submission.[12]

21 U.S.C. § 355(b)(1) requires that an NDA include "the patent number and the expiration date of any patent which claims the drug for which the applicant submitted the application or which claims a method of using such drug,"[13] where "a claim of patent infringement [of such patent] could reasonably be asserted if a person not licensed by the owner engaged in the manufacture, use, or sale of the drug."[14] The duty to submit patent information extends to a supplementary application filed by an NDA holder who wants to add or change the dosage form or route of administration, to add or change the strength, or to change the drug product from prescription use to over-the-counter use.[15]

The FDA categorizes NDA-related patents into drug substance (active ingredient) patents, drug product (formulation and composition) patents, and method-of-use patents.[16] Patent information must be submitted within thirty days after the date of approval of an NDA, or for a patent issued after the approval of the NDA, within thirty days of the date of the patent issuance.[17] If the submitted patent information fulfills regulatory requirements, the FDA will list such patents in the Approved Drug Products With Therapeutic Equivalence Evaluations (also known as the "Orange Book").[18] The FDA will not, however, review accuracy of submitted patent information.[19]

An ANDA must address the patent information of an approved new drug in two routes.[20] In the first route, under 21 U.S.C. § 355(j)(2)(A)(vii), for each listed patent concerning the approved new drug, an ANDA applicant must certify "(I) that such patent information has not been filed, (II) that such patent has expired, (III) of the date on which such patent will expire, or (IV) that such patent is invalid or will not be infringed[.]"[21] When a listed patent is alleged to be invalid or not infringed (also called a "Paragraph IV certification"), a Paragraph IV ANDA applicant must notify both the patentee and NDA holder of such Paragraph IV certification with a

11. *See* Jacob S. Wharton, *"Orange Book" Listing of Patents Under the Hatch-Waxman Act*, 47 ST. LOUIS U. L.J. 1027, 1030–31 (2003).
12. *See id.*
13. 21 U.S.C. § 355(b)(1) (2012).
14. *Id.*; *see also Caraco Pharm. Labs., Ltd.*, 566 U.S. at 405.
15. *See* 21 C.F.R. §§ 314.53(d)(2)(i)–(ii) (2019).
16. *See* 21 C.F.R. § 314.53(b)(1) (2019).
17. *See* 21 C.F.R. § 314.53(c)(2)(ii) (2019).
18. Andrx Pharm., Inc. v. Biovail Corp., 276 F.3d 1368, 1371 (Fed. Cir. 2002).
19. *See* Colleen Kelly, *The Balance Between Innovation and Competition: The Hatch-Waxman Act, the 2003 Amendments, and Beyond*, 66 FOOD & DRUG L.J. 417, 428 (2011).
20. *See* Caraco Pharm. Labs., Ltd. v. Novo Nordisk, 566 U.S. 399, 406–08 (2012).
21. 21 U.S.C. § 355(j)(2)(A)(vii) (2012); *see also* Apotex, Inc. v. Thompson, 347 F.3d 1335, 1338 (Fed. Cir. 2003).

detailed opinion including factual and legal grounds for the asserted invalidity or non-infringement.[22]

Although 35 U.S.C. § 271(e)(1) precludes a finding of patent infringement "solely for uses reasonably related to the development and submission of information under a Federal law which regulates the manufacture, use, or sale of drugs or veterinary biological products,"[23] § 271(e)(2) treats an ANDA with a Paragraph IV certification as an act of infringement.[24] If the owner of any patent required by 21 U.S.C. § 355(b)(1) files a lawsuit for patent infringement against a Paragraph IV ANDA applicant within forty-five days after the date on which the Paragraph IV notice was received, the FDA will approve such an ANDA "upon the expiration of [a] thirty-month period beginning on the date of the receipt of the notice"[25] or on a date the court may order.[26]

A Paragraph IV ANDA may become effective immediately, if no legitimate lawsuit has been filed during the designated period.[27] Otherwise, before the expiration of the thirty-month period, such ANDA will become effective only on the date of the court's judgment on invalidity or non-infringement or on the date of a settlement order or consent decree signed and entered by the court on invalidity or non-infringement.[28] To encourage generic drug companies to take a risk, the first ANDA applicant with a Paragraph IV certification will enjoy a 180-day exclusivity of sharing the drug market with the original NDA holder without any new generic entries.[29]

In the second route, an ANDA applicant may file "a statement under 21 U.S.C. § 355(j)(2)(A)(viii) averring that the ANDA excludes all uses claimed in the patent ("Section viii statement")."[30] An ANDA applicant with a Section viii statement is not subject to the notice duty imposed on a Paragraph IV ANDA applicant, and no patent lawsuit will be triggered.[31] So, the FDA may approve a Section viii ANDA without waiting for a

22. *See* 21 U.S.C. § 355(j)(2)(B) (2012); *see also Apotex, Inc.*, 347 F.3d at 1338–39.
23. 35 U.S.C. § 271(e)(1) (2018).
24. *See* Eli Lilly & Co. v. Medtronic, Inc., 496 U.S. 661, 678 (1990).
25. 21 U.S.C. § 355(j)(5)(B)(iii) (2012).
26. *Id.*; *see also Eli Lilly & Co.*, 496 U.S. at 677–78.
27. *See Eli Lilly & Co.*, 496 U.S. at 677.
28. 21 U.S.C. § 355(j)(5)(B)(iii)(I).
29. 21 U.S.C. § 355(j)(5)(B)(iv); *see also* Ping-Hsun Chen, *Destroying A Pharmaceutical Patent for Saving Lives?: A Case Study of Sanofi-Synthelabo v. Apotex, Inc.*, 21 ALB. L.J. SCI. & TECH. 125, 141 (2011).
30. AstraZeneca Pharm. LP v. Apotex Corp., 669 F.3d 1370, 1374 (Fed. Cir. 2012); 21 U.S.C. § 355(j)(2)(A)(viii); Caraco Pharm. Labs., Ltd. v. Novo Nordisk, 566 U.S. 399, 406 (2012) ("A section viii statement is typically used when the brand's patent on the drug compound has expired and the brand holds patents on only some approved methods of using the drug.").
31. *See* Purepac Pharm. Co. v. Thompson, 354 F.3d 877, 880 (D.C. Cir. 2004).

thirty-month period.[32] Additionally, there is no delay in generic drug marketing for an ANDA with a Section viii statement.[33]

Whether patent information required under 21 U.S.C. § 355(b)(1) has been correctly submitted is crucial for facilitating the functions of the Hatch-Waxman Act. An ANDA applicant is not allowed to make both a Paragraph IV certification and Section viii statement,[34] except in rare circumstances.[35] If a submitted patent should otherwise be labeled as a method-of-use patent, an ANDA applicant will be forced to file a Paragraph IV certification rather than a Section viii statement, which may delay marketing of the generic drug if the patentee sues such ANDA applicant for patent infringement.

Before the enactment of the Medicare Prescription Drug, Improvement, and Modernization Act of 2003 ("MMA"), some brand-name drug companies misused the patent information submission process to delay FDA's review of a ANDA.[36] For example, in *In re Buspirone Patent Litigation*, the defendant, a brand-name drug company, earned an additional 30-month stay of FDA's review of the first ANDA by submitting to the FDA the disputed patent allegedly misrepresented as covering uses of the approved drug, such that the defendant allegedly violated Section 2 of the Sherman Act.[37] But, the MMA has clarified what types of patents cannot be submitted as the required patent information.[38] Currently, information

32. *See id.*

33. *See Caraco Pharm. Labs., Ltd.*, 566 U.S. at 406.

34. *See Purepac Pharm. Co.*, 354 F.3d at 880 ("The FDA has long required that for every patent ANDA applicants use either a paragraph IV certification or a section viii statement—they may not use both.").

35. *See* U.S. FOOD & DRUG ADMINISTRATION, GUIDANCE FOR INDUSTRY-180-DAY EXCLUSIVITY: QUESTIONS AND ANSWERS (Draft Guidance) 7 (Jan. 2017), available at https://www.fda.gov/downloads/Drugs/GuidanceComplianceRegulatoryInformation/Guidances/UCM536725.pdf (last visited Aug. 30, 2018) ("FDA has determined that when both drug product or drug substance claims and method-of-use claims are contained within the same patent, an applicant may file a paragraph IV certification with respect to the drug product or drug substance patent claim(s) and a section viii statement with respect to the method-of-use claim(s) in the patent. This type of certification is commonly referred to as a *split certification*."); *see also* Watson Labs., Inc. v. Sebelius, No. 12-1344, 2012 WL 6968224, at *4 n.3 (D.D.C. Oct. 22, 2012).

36. *See* Kelly, *supra* note 19, at 428–30 (describing some previous patent-listing problems that caused multiple thirty-month stays).

37. *In re* Buspirone Patent Litig., 185 F. Supp. 2d 363, 365–66 (S.D.N.Y. 2002).

38. *See* Esther H. Steinhauer, *Is Noerr-Pennington Immunity Still A Viable Defense Against Antitrust Claims Arising from Hatch-Waxman Litigation?*, 61 FOOD & DRUG L.J. 679, 696–97 (2006) (describing Orange Book patent listing requirements under the MMA); *see also* MMA § 1111(b)(2)(D), Pub. L. 108–173, 117 stat. 2066, 2456 (2003) (codified as 21 U.S.C. § 355(c)(3)(D)(ii)(I) (2018)) ("If an owner of the patent or the holder of the approved application under subsection (b) of this section for the drug that is claimed by the patent or a use of which is claimed by the patent brings a patent infringement action against the applicant, the applicant may assert a counterclaim *seeking an order requiring the holder to correct or delete the patent information* submitted by the holder under subsection (b) of this section or this subsection on the ground that *the patent does not claim either— (aa) the drug for which the application was approved; or (bb) an approved method of using the drug*." (emphasis added)).

concerning process patents, patents claiming packaging, patents claiming metabolites, and patents claiming intermediates cannot be submitted to the FDA.[39]

While an NDA holder can no longer submit patents that do not cover uses of the approved drug, *Actos II* may demonstrate a new form of false patent information because the *Actos II* defendant mislabeled the disputed patents as drug product patents rather than method-of-use patents. This Article will explore whether mislabeling a patent submitted to the FDA may cause an NDA holder to violate Section 2 of the Sherman Act. Part II analyzes the *Actos II* decision. Part III addresses why the descriptive information concerning the disputed patents in *Actos II* submitted to the FDA as the required patent information is false. Part IV discusses why mislabeling of a submitted patent may violate Section 2 of the Sherman Act. Part IV also discusses how statute of limitations should be evaluated in criminal enforcement.[40]

I. ANALYSIS OF IN RE ACTOS END-PAYOR ANTITRUST LITIGATION

A. BACKGROUND

A patient with diabetes cannot regulate the blood sugar levels inside his body.[41] The irregularity is typically caused by a lack of insulin, a hormone produced in the pancreas.[42] Humans need insulin to make blood sugar enter cells which is converted into energy.[43]

There are two types of diabetes: Type 1 and Type 2.[44] A patient with Type 1 diabetes has a pancreas that fails to produce insulin, so he must acquire insulin from an outside source regularly.[45] On the other hand, the pancreas of a patient with Type 2 diabetes can produce insulin, but the patient's body cannot use the insulin effectively.[46] That is, the insulin cannot help blood sugar enter into cells, so the body cannot gain energy from its main source generated from blood sugar.[47] Type 2 diabetes is more common than Type 1 diabetes in those diabetes patients.[48]

39. *See* 21 C.F.R. § 314.53(b)(1).

40. *But see* U.S. DEP'T OF JUSTICE, AN ANTITRUST PRIMER FOR FEDERAL LAW ENFORCEMENT PERSONNEL 4 (Apr. 2005), available at https://www.justice.gov/atr/file/761666/download (last visited Aug. 29, 2018) (stating that the Department of Justice usually does not prosecute Section 2 violations criminally).

41. Takeda Chem. Indus., Ltd. v. Alphapharm Pty., Ltd., 492 F.3d 1350, 1352 (Fed. Cir. 2007).

42. *Id.*

43. *Id.*

44. *Id.*

45. *Id.*

46. *Id.*

47. *Id.*

48. *Id.*

ACTOS developed by Takeda Chemical Industries, Ltd. and Takeda Pharmaceuticals North America, Inc. (collectively, "Takeda") is a drug used for treating Type 2 diabetes.[49] ACTOS is the brand name, while pioglitazone hydrochloride (also known as "pioglitazone") is the generic name of ACTOS.[50] Takeda filed an NDA for ACTOS on January 15, 1999.[51] The FDA approved the NDA on July 15, 1999.[52]

The patent information submitted with the ACTOS NDA included U.S Patent Nos. 4,687,777 ("777 Patent"), 5,965,584 ("584 Patent") and 6,329,404 ("404 Patent").[53] The 777 Patent covered pioglitazone (5–{4–[2–(5–ethyl–2–pyridyl)ethoxy]benzyl}–2,4–thiazolidinedione)[54] and expired on January 17, 2011.[55] The 777 Patent was listed as a drug substance patent in the Orange Book.[56] On the other hand, the 584 Patent and 404 Patent covered the combination of pioglitazone with other antidiabetic agents and methods of using such combination for diabetes treatment,[57] and they expired on June 19, 2016.[58] But, Takeda described to the FDA that the 584 Patent and 404 Patent were both drug product patents and method-of-use patents for ACTOS.[59] Thus, the Orange Book listed the 584 Patent and 404 Patent as method-of-use patents.[60]

On July 15, 2003, four generic drug companies filed ANDAs for ACTOS individually.[61] Regarding the 777 Patent, two companies submitted a Paragraph IV certification, while the other two submitted a Paragraph III certification indicating that their ANDAs would not be approved until the

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49. *Id.*

50. *See* Takeda Chem. Indus., Ltd. v. Watson Pharm., Inc., 329 F. Supp. 2d 394, 398 (S.D.N.Y. 2004).

51. *See In re* Actos End-Payor Antitrust Litig. (*Actos II*), 848 F.3d 89, 95 (2d Cir. 2017).

52. *See Watson Pharm., Inc.*, 329 F. Supp. 2d at 398.

53. *See In re* Actos End Payor Antitrust Litig. (*Actos I*), No. 13-CV-9244 RA, 2015 WL 5610752, at *4 (S.D.N.Y. Sept. 22, 2015). There were other method-of-use patents listed in the Orange Book and associated with ACTOS. *See* Watson Labs., Inc. v. Sebelius, No. CIV.A. 12-1344 ABJ, 2012 WL 6968224, at *7 (D.D.C. Oct. 22, 2012), *vacated*, No. 12-5332, 2013 WL 11250319 (D.C. Cir. June 10, 2013).

54. *See* U.S Patent No. 4,687,777 claim 2; *see also Alphapharm Pty., Ltd.*, 492 F.3d at 1353–54.

55. *See Actos I*, 2015 WL 5610752, at *4.

56. *See Actos II*, 848 F.3d at 95.

57. *See* Takeda Pharm. Co. v. Sandoz, Inc., No. 07 CIV. 3844(DLC), 2007 WL 2936208, at *1 (S.D.N.Y. Oct. 9, 2007).

58. *See Actos I*, 2015 WL 5610752, at *4.

59. *See Actos II*, 848 F.3d at 95.

60. *See id.* at 99. Before August 2003, the Orange Book could list only one description for a patent. *See id.* at 98. If an NDA applicant described a submitted patent as claiming both a method of using a drug and the drug itself, the Orange Book would list the patent as only a method-of-use patent. *See id.* at 98–99. The Medicare Modernization Act of 2003 corrected that flaw and provided a counterclaim for a generic drug company in Paragraph IV certification-triggered patent litigation to delete or correct the patent information in the Orange Book. *See* Kelly, *supra* note 19, at 442; *see also* 21 U.S.C. § 355(j)(5)(C)(ii).

61. *See Actos II*, 848 F.3d at 95.

patent expires.[62] Regarding the 584 Patent and 404 Patent, all four companies submitted a Paragraph IV certification as to the drug product claims and a Section viii statement as to the method-of-use claims.[63] However, the FDA ultimately determined that each of the four companies must file Paragraph IV certifications for the 777 Patent, 584 Patent, and 404 Patent.[64]

After the first four ANDAs, several other generic drug companies also filed ANDAs for ACTOS.[65] Among them, Teva Pharmaceutical Industries, Ltd. and Teva Pharmaceuticals USA, Inc. (collectively, "Teva") only submitted a Section viii statement for the 584 Patent and 404 Patent when filing their ANDA on July 14, 2004.[66] Later, on April 14, 2009, Teva filed an ANDA for ACTO*plus* Met ("ACTO*plus*") that was another drug developed by Takeda for treating Type 2 diabetes.[67] ACTO*plus* contains pioglitazone hydrochloride and metformin.[68] Takeda's ACTO*plus* NDA was approved in 2005.[69] The patent information for ACTO*plus* included the 584 Patent.[70]

Takeda sued the first four ACTOS ANDA applicants under 35 U.S.C. § 271(e)(2) on October 17, 2003.[71] But, in 2010, Takeda settled the lawsuits with the first four applicants and granted each applicant a nonexclusive license, such that they could begin to sell generic ACTOS products on August 17, 2012.[72]

Teva was initially not subject to a lawsuit under 35 U.S.C. § 271(e)(2) for its ACTOS ANDA.[73] But, after filing the ACTO*plus* ANDA, Teva was sued for patent infringement by Takeda on May 18, 2009.[74] In August 2009, a citizen petition was filed with the FDA to argue that an ACTOS ANDA without a Paragraph IV certification for the 584 Patent and 404 Patent

62. *See Actos I*, 2015 WL 5610752, at *5; *see also* Bayer AG v. Elan Pharm. Research Corp., 212 F.3d 1241, 1245 (Fed. Cir. 2000) ("An ANDA certified under Paragraph III must, even after meeting all applicable scientific and regulatory requirements, wait for approval until the listed drug's patent expires.").

63. *See Actos II*, 848 F.3d at 95; *see also Actos I*, 2015 WL 5610752, at *5; *Watson Pharm., Inc.*, 329 F. Supp. 2d at 399 ("Because its ANDA seeks FDA approval only for pioglitazone monotherapy, Watson's Section viii Statements declare that it is not seeking approval for Takeda's patented uses of pioglitazone.").

64. *See Actos I*, 2015 WL 5610752, at *5.

65. *See Actos II*, 848 F.3d at 95; *see also Id.* at *7.

66. *See Actos I*, 2015 WL 5610752, at *7.

67. *See id.* at *8.

68. *See id.* at *4.

69. *See id.*

70. *See id.* ("[T]he 584 patent claims a drug product consisting of pioglitazone hydrochloride and a biguanide (metformin)[.]").

71. *See id.* at *5.

72. *See id.* at *6.

73. *See id.* at *7.

74. *See id.* at *8.

should not be approved.[75] On January 22, 2010, Takeda responded to the FDA that the 584 Patent and 404 Patent were correctly described as both drug product patents and method-of-use patents.[76] On March 15, 2010, the FDA granted the citizen petition, stating that an ACTOS ANDA without a Paragraph IV certification as to the 584 Patent and 404 Patent would not be considered eligible for completing ANDA submission.[77] On March 30, 2010, Teva moved to amend its answer to Takeda's complaint in the ACTO*plus* litigation and challenged Takeda's incorrect patent descriptions about the 584 Patent and 404 Patent.[78]

Finally, Takeda and Teva settled the patent litigation on December 22, 2010. Takeda allowed Teva to sell Takeda-manufactured ACTOS products on August 17, 2012 and to sell Teva's own generic drugs 180 days later.[79]

The plaintiffs in *Actos II* were patients who took ACTOS or ACTO*plus*.[80] On December 31, 2013, they sued Takeda, Teva, and the first ACTOS ANDA applicants for violation of various state antitrust, consumer protection, and unjust enrichment laws in the United States District Court for the Southern District of New York.[81] The district court's jurisdiction was based solely on diversity jurisdiction for class action under 28 U.S.C. § 1332(d).[82]

On August 22, 2014, plaintiffs filed the third amended complaint.[83] Among other things, the complaint based the antitrust claims on the allegation that Takeda falsely described the 584 Patent and 404 Patent as drug product patents covering ACTOS, such that the entry of generic ACTOS was delayed and, therefore, the plaintiffs were forced to pay monopoly prices after the 777 Patent expired.[84]

The defendants moved to dismiss the third amended complaint for failure to state a claim and on standing grounds.[85] The district court granted the motion and dismissed the case with prejudice.[86] Then, the plaintiffs appealed the district court's decision to the Second Circuit.[87] But, the only issue on appeal involved the allegations concerning monopolization or attempted monopolization of the ACTOS market.[88] Finally, the Second

75. *See In re* Actos End-Payor Antitrust Litig. (*Actos II*), 848 F.3d 89, 96 (2d Cir. 2017).
76. *See id.*
77. *See id.*
78. *See id.* at 97; *see also Actos I*, 2015 WL 5610752, at *8.
79. *See Actos II*, 848 F.3d at 97; *see also Actos I*, 2015 WL 5610752, at *8.
80. *See Actos I*, 2015 WL 5610752, at *9.
81. *See Actos II*, 848 F.3d at 97.
82. *See id.* at 97 n.7.
83. *See id.* at 97.
84. *See id.*
85. *See Actos I*, 2015 WL 5610752, at *1.
86. *See id.* at *29.
87. *See Actos II*, 848 F.3d at 93.
88. *See id.* at 97.

Circuit reviewed the district court's decision *de novo*[89] and affirmed it in part and vacated it in part.[90] The case was remanded for further proceedings.[91]

B. GOVERNING LAWS

The Second Circuit's review for a motion to dismiss rested on two bodies of law.[92] First, the standard for reviewing a motion to dismiss followed *Ashcroft v. Iqbal*[93] which requires that a complaint "contain sufficient factual matter, accepted as true, to state a claim to relief that is plausible on its face[, so as to allow] the court to draw the reasonable inference that the defendant is liable for the misconduct alleged."[94] Accordingly, at this stage of the proceedings, the plaintiffs' allegations were presumed to be true.[95]

Second, the antitrust claims in *Actos II* were based on various state antitrust laws rather than the Sherman Act.[96] But, the Second Circuit considered those state antitrust laws analogous to Section 2 of the Sherman Act.[97] Because the parties did not dispute that the legal standards under the Sherman Act apply to the issues raised on the appeal, the Second Circuit relied on cases arising from Section 4 of the Clayton Act to establish the legal standard for substantive law issues.[98]

Section 4 of the Clayton Act authorizes a cause of action to a private party "who shall be injured in his business or property by reason of anything forbidden in the antitrust laws[.]"[99] An antitrust plaintiff must establish standing to claim damages from an antitrust defendant.[100]

89. *See id.* (citing Stratte-McClure v. Morgan Stanley, 776 F.3d 94, 99–100 (2d Cir. 2015)).
90. *See id.* at 102.
91. *See id.*
92. *See id.* at 97–98.
93. Ashcroft v. Iqbal, 556 U.S. 662 (2009).
94. *Actos II*, 848 F.3d at 97 (quoting *Ashcroft*, 556 U.S. at 678) (internal quotation marks and citations omitted).
95. *See id.* at 98.
96. *See id.* at 97; *see also* Picone v. Shire PLC, No. 16-CV-12396-ADB, 2017 WL 4873506, at *4 (D. Mass. Oct. 20, 2017) ("Under federal law, indirect purchasers cannot bring antitrust claims for damages under the Sherman Act. … Following [Illinois Brick Co. v. Illinois, 431 U.S. 720 (1977)], various states passed legislation granting indirect purchasers standing to sue under state antitrust laws.").
97. *See Actos II*, 848 F.3d at 97.
98. *See id.* at 97–98 (citing Zenith Radio Corp. v. Hazeltine Research, Inc., 395 U.S. 100 (1969); Argus Inc. v. Eastman Kodak Co., 801 F.2d 38, 41 (2d Cir. 1986); *In re* DDAVP Direct Purchaser Antitrust Litig., 585 F.3d 677 (2d Cir. 2009); *In re* Publ'n Paper Antitrust Litig., 690 F.3d 51, 66 (2d Cir. 2012)).
99. 15 U.S.C. § 15(a) (2012); *see also Publ'n Paper*, 690 F.3d at 62.
100. *See* Jerry L. Beane, *Antitrust*, 28 TEX. TECH L. REV. 273, 279–82 (1997) (discussing the standing requirements under Section 4 of the Clayton Act).

The Second Circuit focused on the issue of causation in fact.[101] The plaintiffs were required to "show that a defendant's anticompetitive act was a 'material' and 'but-for' cause of plaintiff's injury, although not necessarily the sole cause."[102] However, they were not required to "exhaust all possible alternative sources of injury[.]"[103] In *Actos II*, the alleged anticompetitive act was Takeda's misrepresentation of the 584 Patent and 404 Patent as drug product patents,[104] and the alleged antitrust injury was the delay of marketing of generic versions of ACTOS.[105]

C. SECOND CIRCUIT'S HOLDING

The plaintiffs provided two causation theories concerning why generic drug companies would not have entered the generic ACTOS market when the 777 Patent expired.[106] Both theories were based on Takeda's false descriptions of the 584 Patent and 404 Patent.[107] The Second Circuit assumed this common basis was true for purposes of reviewing the appeal.[108]

The first theory rested specifically on the generic drug companies' knowledge of Takeda's false patent descriptions.[109] According to the plaintiffs, because of the false descriptions, the first four ANDA applicants for ACTOS were forced to submit a Paragraph IV certification.[110] Then, a 180-day exclusivity period was triggered to prevent other subsequent ANDA applicants from entering the generic ACTOS market as early as the first four ANDA applicants would have done.[111] After the ANDA-related patent lawsuits commenced, Takeda settled with the first four ANDA applicants to allow them to enter the generic market only on or after August 17, 2012.[112] Therefore, but for the false descriptions, the Paragraph IV route would not have happened, and the plaintiffs would have been able to purchase the generic versions of ACTOS as early as January 17, 2011, the expiration date of the 777 Patent.[113]

The Second Circuit found the first theory implausible because the plaintiffs failed to allege in their complaints that when the first four ANDAs were filed in 2003 and 2004, the applicants had known that Takeda falsely

101. *See Actos II*, 848 F.3d at 97 (citing *Argus Inc.*, 801 F.2d at 41).
102. *Id.* (citing *Publ'n Paper*, 690 F.3d at 65–66).
103. *Id.* at 97–98 (quoting *Zenith Radio Corp.*, 395 U.S. at 114 n.9).
104. *See id.* at 98–101.
105. *See id.*
106. *See id.* at 98.
107. *See id.* at 98–99.
108. *See id.* at 98.
109. *See Id.* at 98–99.
110. *See id.* at 98.
111. *See id.*
112. *See id.*
113. *See id.*

described the 584 Patent and 404 Patent.[114] Without such knowledge, the alleged causation was broken because the applicants might believe that the Hatch-Waxman Act required them to submit the Paragraph IV certifications rather than the false patent description forced them to do so.[115]

The second theory specifically addressed Teva's ANDA.[116] According to the plaintiffs, Teva originally filed Section viii statements as to the 584 Patent and 404 Patent when its ACTOS ANDA was filed.[117] The FDA issued a tentative approval of Teva's ANDA in 2006.[118] But, because of Takeda's false descriptions of the 584 Patent and 404 Patent as drug product patents in response to the citizen petition, the FDA accepted Takeda's response and required Teva to file Paragraph IV certifications instead.[119] Then, Teva went from not being subject to the 180-day exclusivity period to being prevented from entering the generic ACTOS market during such period.[120] Therefore, but for Takeda's false patent descriptions, Teva would have received the FDA's approval to enter the market of generic ACTOS for non-patented uses as soon as the 777 Patent expired on January 17, 2011.[121]

The Second Circuit found plaintiffs' second theory highly plausible, because the theory was not premised on "Teva's knowledge of Takeda's description of its patents as drug product patents."[122] The FDA revoked its tentative approval of Teva's ANDA and required Teva to submit Paragraph IV certifications for both the 584 Patent and the 404 Patent.[123] The FDA based its decision solely on Takeda's descriptions of the 584 Patent and 404 Patent as drug product patents,[124] because "the FDA made no attempt to evaluate whether the descriptions were true, but simply accepted them at face value."[125] Although Teva later challenged the truthfulness of Takeda's descriptions in the ACTO*plus* litigation, it eventually settled with Takeda because "the damage[s] had been done."[126]

The Second Circuit did not consider whether the settlement between Teva and Takeda foreclosed the second theory.[127] Otherwise, as the court cautioned, "[a] plaintiff could hardly ask for a clearer causal connection."[128]

114. *See id.* at 98–99.
115. *See id.* at 98.
116. *See id.* at 99–100.
117. *See id.* at 99.
118. *See id.*
119. *See id.* at 100.
120. *See id.*
121. *See id.* at 100.
122. *Id.*
123. *See id.*
124. *See id.*
125. *Id.*
126. *Id.*
127. *See id.* at 100.
128. *Id.*

In addition, the court rejected Takeda's argument that the plaintiffs failed to cut off other possible causes of Teva's delayed entry into the generic ACTOS market.[129] While Takeda offered several causation theories,[130] the court criticized that "[i]t is Takeda, however, that is here engaging in gross speculation."[131] The court further held that some other causes may supersede the second theory but "do not mandate dismissing the complaint now."[132]

D. DISTRICT COURT'S DECISION FOLLOWING ACTOS II

After the case was remanded, the plaintiffs moved for leave to amend the complaint and dropped the claims dismissed by the district court and Second Circuit.[133] The proposed amended complaint expanded the second causation theory affirmed by the Second Circuit to generic drug companies other than Teva.[134] The district court granted the plaintiffs' amendments "to the extent they allege that Takeda's misrepresentations caused the FDA's [2010] ruling [on the August 2009 citizen petition] and that the FDA's ruling in turn caused a delay in the generics' entry[,]"[135] because the allegations were within the scope of the Second Circuit's remand.[136]

The district court also found the proposed amendments applicable to non-Teva generic drug companies.[137] Although those non-Teva ANDA applicants were not parties targeted by the August 2009 citizen petition,[138] the district court held that "the FDA's [2010] ruling was a matter of public record which the generics would plausibly have been following with interest given the ruling's potential impact on their own lawsuits and entries into the market."[139] Furthermore, the district court agreed with the plaintiffs' proposed allegations that if the FDA had ruled that Takeda should have not listed the 584 Patent and 404 Patent as drug product patents rather than method-of-use patents, Teva would have been permitted "to proceed as it had planned to do, [and] that outcome plausibly would have led the generics to enter the market sooner[.]"[140]

129. *See id.* at 100–01.
130. *See id.*
131. *Id.* at 101.
132. *Id.*
133. *See In re* Actos End-Payor Antitrust Litig. (*Actos III*), No. 13-CV-9244 (RA), 2018 WL 840099, at *3 (S.D.N.Y. Feb. 12, 2018).
134. *See id.* at *5.
135. *Id.* at *6.
136. *See id.*
137. *See id.*
138. *See id.*
139. *See id.* at *6..
140. *Id.*

II. FALSE PATENT INFORMATION IN *ACTOS II*

A. PATENT INFORMATION REQUIRED BY THE FDA

The Hatch-Waxman Act originally did not specify which patent should be submitted for patent-listing purposes.[141] In 2003, the FDA finally implemented regulations to clarify which patent is relevant to an approved drug.[142]

Currently, for drug substance patents, the FDA only requires information about patents claiming "the drug substance that is the subject of the pending or approved NDA"[143] or patents claiming "a drug substance that is the same as the active ingredient that is the subject of the approved or pending NDA."[144] If an applicant wants to submit information on patents claiming "*only* a polymorph that is the same as the active ingredient described in the approved or pending NDA,"[145] he must file additional technical data required under 21 C.F.R. § 314.53(b)(2) to prove that "a drug product containing the polymorph will perform the same as the drug product described in the NDA."[146] If an applicant submits a product-by-process patent, the submission must include a statement that the product claimed is novel.[147]

For drug product patents, the required information only covers patents claiming the drug product described in the pending or approved NDA.[148] 21 C.F.R. § 314.3 defines "drug product" as "a finished dosage form, e.g., tablet, capsule, or solution, that contains a drug substance, generally, but not necessarily, in association with one or more other ingredients."[149] Thus, such submitted patents must claim a finished dosage form. If a patent claims both a drug product and a drug substance, an NDA applicant may choose to submit the required information concerning either the drug product or drug substance.[150]

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141. *See* Kelly, *supra* note 19.
142. *See id.* at 433.
143. 21 C.F.R. § 314.53(b)(1) (2019).
144. *Id.*
145. *Id.* (emphasis added). A "polymorph" is a crystal structure of a compound. *Id. See In re* Depomed Patent Litig., No. CV 13-4507 (CCC-MF), 2016 WL 7163647, at *6–7 (D.N.J. Sept. 30, 2016) (describing the definition of "polymorph" and the measurement for identifying the crystal structure of a polymorph). For more information on "polymorph," *see generally* CTR. FOR DRUG EVALUATION & RES., FOOD AND DRUG ADMIN., U.S. DEP'T OF HEALTH AND HUMAN SERVICES, GUIDANCE FOR INDUSTRY: ANDAS: PHARMACEUTICAL SOLID POLYMORPHISM (July 2007), available at http://www.fda.gov/downloads/DrugsuidanceComplianceRegulatoryInformation/Guidances/ucm072866.pdf.
146. 21 C.F.R. § 314.53(b)(1).
147. *See* 21 C.F.R. §§ 314.53(c)(2)(i)(L) (2019); *see also* Cadence Pharm., Inc. v. Fresenius Kabi USA, LLC, No. 13CV139 DMS (MDD), 2013 WL 12075975, at *4 (S.D. Cal. June 26, 2013).
148. *See* 21 C.F.R. § 314.53(b)(1).
149. 21 C.F.R. § 314.3 (2019).
150. *See* 21 C.F.R. §§ 314.53(c)(2)(i)(S)(1)–2 (2019).

For patents related to a method of use, the FDA only requires information on patents claiming "indications or other conditions of use for which approval is sought or has been granted in the NDA."[151] The information must "separately identify each pending or approved method of use and related patent claim(s)."[152] Particularly, for approved NDAs, applicants must file additional information to "identify with specificity the section(s) and subsection(s) of the approved labeling that describes the method(s) of use claimed by the patent submitted."[153] In addition, if an NDA applicant identifies a submitted patent as a method-of-use patent, the applicant must provide additional information to show "whether that patent also claims either the drug substance (active ingredient) or the drug product (composition/formulation)."[154]

Finally, the FDA has required an NDA holder to fill out declaration forms for patent information submission.[155] An NDA holder is now subject to criminal liability under 18 U.S.C. § 1001 for submitting false patent information to the FDA.[156] But, *Actos II* suggests that the criminal liability does not completely prevent a brand-name drug company from cheating the FDA. The 584 Patent and 404 Patent do not cover the ACTOS product, but they were falsely labeled as drug product patents.

B. FALSE PATENT INFORMATION IN ACTOS II

The 584 Patent has both product claims (claims 1–5, 11, 15) and method-of-use claims (claims 6–10, 12–14, 16).[157] Claim 1 is an independent claim, while other product claims all depend on claim 1.[158]

151. 21 C.F.R. § 314.53(b)(1).

152. *Id.*

153. *Id.*; *see also* Caraco Pharm. Labs., Ltd. v. Novo Nordisk A/S, 566 U.S. 399, 405 (2012) ("[T]he regulations issued under that statute require that, once an NDA is approved, the brand provide a description of any method-of-use patent it holds.").

154. 21 C.F.R. § 314.53(c)(2)(i)(O)(3) (2019).

155. *See* 21 C.F.R. § 314.53(c)(1) ("We will not accept the patent information unless it is submitted on the appropriate form, Form FDA 3542 or 3542a."); *see also* Natalie M. Derzko, *The Impact of Recent Reforms of the Hatch-Waxman Scheme on Orange Book Strategic Behavior and Pharmaceutical Innovation*, 45 IDEA 165, 217-18 (2005).

156. *See* Jacob S. Wharton, *"Orange Book" Listing of Patents Under the Hatch-Waxman Act*, 47 ST. LOUIS U. L.J. 1027, 1062 (2003); *see also* U.S. FOOD & DRUG ADMIN., FDA Form 3542, *available at* https://www.fda.gov/downloads/aboutfda/reportsmanualsforms/forms/ucm048345.pdf (last visited Aug. 7, 2018) ("*Warning: A willfully and knowingly false statement is a criminal offense under 18 U.S.C. 1001.*"); 18 U.S.C. § 1001(a) provides that "[e]xcept as otherwise provided in this section, whoever, in any matter within the jurisdiction of the executive, legislative, or judicial branch of the Government of the United States, knowingly and willfully (1) falsifies, conceals, or covers up by any trick, scheme, or device a material fact; (2) makes any materially false, fictitious, or fraudulent statement or representation; or (3) makes or uses any false writing or document knowing the same to contain any materially false, fictitious, or fraudulent statement or entry; shall be fined under this title . . . .". 18 U.S.C. § 1001(a).

157. *See* U.S Patent No. 5,965,584 col.17 l.46–col.20 l.10.

158. *See id.*

Claim 1 of the 584 Patent recites "[a] pharmaceutical composition comprising an insulin sensitivity enhancer [i]n combination with a *biguanide*, wherein the insulin sensitivity enhancer is selected from the group consisting of: (1) 5-(4-(2-(3-ethyl-2-pyridyl)ethoxy)benzyl]-2,4-thiazolidinedione or its pharmacologically acceptable salt, . . . , (3) *5-(4-(2-(5-ethyl-2-pyridyl)ethoxy)benzyl)-2,4-thiazolidinedione* or its pharmacologically acceptable salt, . . . , and (10) 5-((4-(2-methyl-2-pyridylamino)ethoxy)phenyl)-methyl)-2,4-thiazolidinedione or its pharmacologically acceptable salt."[159] Claim 1 is a Markush-type claim.[160] So, claim 1 may be interpreted as a pharmaceutical composition having at least a biguanide and one of those ten listed insulin sensitivity enhancers (for example, pioglitazone).[161]

Similarly, the 404 Patent has both product claims (claims 1–12) and method-of-use claims (claims 13–25).[162] Claim 1 is an independent claim, while other product claims are dependent claims.[163]

Claim 1 of the 404 Patent recites "[a] pharmaceutical composition comprising an insulin sensitivity enhancer [i]n combination with an *insulin secretion enhancer*, wherein the insulin sensitivity enhancer is selected from the group consisting of: (1) 5-(4-(2-(3-ethyl-2-pyridyl)ethoxy)benzyl)-2,4-thiazolidinedione or its pharmacologically acceptable salt, . . . (3) *5-(4-(2-(5-ethyl-2-pyridyl)ethoxy)benzyl)-2,4-thiazolidinedione* or its pharmacologically acceptable salt, and (4) 5-(4-(2-(6-ethyl-2-pyridyl)ethoxy)benzyl)-2,4-thiazolidinedione or its pharmacologically acceptable salt."[164] Again, claim 1 is a Markush-type claim. Claim 1 may be interpreted as a pharmaceutical composition having at least an insulin secretion enhancer and one of those four listed insulin sensitivity enhancers (for instance, pioglitazone).[165]

159. U.S. Patent No. 5,965,584 claim 1 (emphasis added).

160. *See* Abbott Labs. v. Baxter Pharm. Prod., Inc., 334 F.3d 1274, 1280 (Fed. Cir. 2003) ("A Markush group is a listing of specified alternatives of a group in a patent claim, typically expressed in the form: a member selected from the group consisting of A, B, and C. Therefore, if wherein R is a material selected from the group consisting of A, B, C and D is a proper limitation then wherein R is A, B, C or D shall also be considered proper." (quotation marks omitted)).

161. Claim 4 of the 584 Patent further recites "wherein the insulin sensitivity enhancer is pioglitazone or its hydrochloride and the biguanide is metformin." U.S Patent No. 5,965,584 claim 4; *see also* Sam F. Halabi, *The Drug Repurposing Ecosystem: Intellectual Property Incentives, Market Exclusivity, and the Future of "New" Medicines*, 20 YALE J. L. & TECH. 1, 45 (2018) ("Metformin (dimethyl biguanide) is one of three biguanides originally derived from the French lilac.").

162. *See* U.S. Patent No. 6,329,404 col.17 l.56–col.20 l.18.

163. *See id.*

164. U.S Patent No. 6,329,404 claim 1 (emphasis added).

165. Claim 2 of the 404 Patent further recites "wherein the insulin sensitivity enhancer is pioglitazone or its hydrochloride." U.S Patent No. 6,329,404 claim 2.

ACTOS does not include a biguanide or insulin secretion enhancer as an ingredient.[166] Therefore, ACTOS is not covered by claim 1 and its dependent claims of the 584 Patent or 404 Patent.[167] The 584 Patent and 404 Patent cannot be labeled as drug product patents for ACTOS.

On the other hand, the 584 Patent and 404 Patent may be labeled as method-of-use patents for ACTOS. The approved ACTOS labeling describes the therapeutic effect of ACTOS in combination with metformin or sulfonylurea.[168] In addition, claim 6 of the 584 Patent recites "[a] method for treating diabetes in a mammal in need thereof, which comprises administering to such mammal a therapeutically effective amount of an insulin sensitivity enhancer in combination with a biguanide,"[169] while claim 10, dependent from claim 6, further recites "wherein the insulin sensitivity enhancer is *pioglitazone* or its hydrochloride and the biguanide is *metformin*."[170] Claim 13 of the 404 Patent recites "[a] method for treating diabetes in a mammal in need thereof, which comprises administering to such mammal a therapeutically effective amount of an insulin sensitivity enhancer in combination with an insulin secretion enhancer, wherein the insulin sensitivity enhancer is selected from the group consisting of: . . . (3) 5-(4-(2-(5-ethyl-2-pyridyl)ethoxy)benzyl)-2,4-thiazolidinedione or its pharmacologically acceptable salt,"[171] while dependent claim 15 further recites "[t]he method according to claim 13, wherein the insulin secretion enhancer is a sulfonylurea."[172]

Therefore, Takeda made a false statement concerning the nature of the 584 Patent and 404 Patent when it responded to the citizen petition in 2010. Takeda, however, has never been charged with violating 18 U.S.C. § 1001. It is too late for the Department of Justice ("DOJ") to prosecute Takeda for

166. *See In re* Actos End Payor Antitrust Litig. (*Actos I*), No. 13-CV-9244 RA, 2015 WL 5610752, at *4 (S.D.N.Y. Sept. 22, 2015) ("[T]he 584 patent was also listed by Takeda in the Orange Book for ACTO*plus* (which contains metformin), and the 404 patent was listed for Ducetact (which contains an insulin secretion enhancer)."); *see also Sandoz, Inc.*, 2007 WL 2936208, at *4 ("Specifically, Takeda has alleged . . . Moreover, at the time of the filing of its ANDA, Sandoz manufactured the very products that, when used in combination with pioglitazone, are covered by Takeda's patents: Sandoz sells metformin (a biguanide), covered by the '584 Patent, and glimepride (an insulin secretion enhancer), covered by the '404 Patent.").

167. *See* Cognex Corp. v. Int'l Trade Comm'n, 550 F. App'x 876, 881 (Fed. Cir. 2013) ("[B]ecause all other asserted claims depend from claim 1, and a dependent claim necessarily cannot be infringed if the independent claim is not infringed . . . .") (citation omitted).

168. *See* TAKEDA PHARMACEUTICALS AMERICA, INC., *Labeling of ACTOS*, 32–36 (2011), https://www.accessdata.fda.gov/drugsatfda_docs/label/2011/021073s043s044lbl.pdf (last visited Aug. 26, 2018).

169. U.S. Patent No. 5,965,584 claim 6.

170. U.S. Patent No. 5,965,584 claim 10 (emphasis added).

171. U.S. Patent No. 6,329,404 claim 13.

172. U.S. Patent No. 6,329,404 claim 15.

violation of 18 U.S.C. § 1001 because the statute of limitations which is five years has passed.[173]

III. VIOLATION OF SECTION TWO OF THE SHERMAN ACT

In addition to criminal liability under 18 U.S.C. § 1001, *Actos II* may provide a cause of action for the DOJ to sue a brand-name drug company for violating Section 2 of the Sherman Act to condemn false patent information submission.

A. ELEMENTS OF SECTION TWO

There are four major categories of Section 2 cases: actual monopolization, attempted monopolization, joint monopolization, and incipient conspiracies to monopolize.[174] The scenario of false patent information submission may fall within actual monopolization or attempted monopolization, both of which target a single firm.[175]

"Actual monopolization" has two elements: "(1) the possession of monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident."[176] On the other hand, "attempted monopolization" requires "(1) that the defendant has engaged in predatory or anticompetitive conduct with (2) a specific intent to monopolize and (3) a dangerous probability of achieving monopoly power."[177]

The analysis of monopolization starts with defining the "relevant market" of the defendant's product.[178] Courts consider "all products

173. *See* United States v. Grenier, 513 F.3d 632, 636 (6th Cir. 2008) ("The applicable statute of limitations for prosecutions brought under 18 U.S.C. § 1001 is five years. The statute of limitations begins to run when a crime is complete, that is, when each element of the crime charged has occurred." (internal citations omitted)); *see also* 18 U.S.C. § 3282(a) (2018) ("Except as otherwise expressly provided by law, no person shall be prosecuted, tried, or punished for any offense, not capital, unless the indictment is found or the information is instituted within five years next after such offense shall have been committed.").

174. *See* WILLIAM HOLMES & MELISSA MANGIARACINA, ANTITRUST LAW HANDBOOK § 3:2 (Westlaw, Dec. 2017 Update). There are four special forms of monopolizing acts that violate Section 2: monopoly leveraging, essential facilities monopolization, predatory pricing, and discount bundling. *See id.*

175. *See id.*

176. Mylan Pharm. Inc. v. Warner Chilcott Pub. Ltd., 838 F.3d 421, 433 (3d Cir. 2016); *see also* New York *ex rel*. Schneiderman v. Actavis PLC, 787 F.3d 638, 651 (2d Cir. 2015) ("To establish monopolization in violation of § 2, a plaintiff must prove not only that the defendant possessed monopoly power in the relevant market, but that it willfully acquired or maintained that power 'as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident.'").

177. *New York ex rel. Schneiderman*, 787 F.3d at 651 (quoting Spectrum Sports, Inc. v. McQuillan, 506 U.S. 447, 456 (1993)).

178. *See* Geneva Pharm. Tech. Corp. v. Barr Labs. Inc., 386 F.3d 485, 495–96 (2d Cir. 2004).

reasonably interchangeable by consumers for the same purposes."[179] Courts may also consider "cognizable submarkets which themselves constitute the appropriate market for antitrust analysis."[180] The inquiry of "submarket" is fact intensive and based on "such practical indicia as industry or public recognition of the submarket as a separate economic entity, the product's peculiar characteristics and uses, unique production facilities, distinct customers, distinct prices, sensitivity to price changes, and specialized vendors."[181]

The second key question focuses on "monopoly power" which is defined as "the power to control prices or exclude competition."[182] To determine whether a defendant possesses monopoly power, courts may consider direct "evidence of control over prices or the exclusion of competition" or draw an inference "from a firm's large percentage share of the relevant market."[183] When using evidence related to the defendant's high market share, courts further consider "other characteristics of the market, such as the strength of competition, the probable development of the industry, the barriers to entry, the nature of the anticompetitive conduct and the elasticity of consumer demand."[184]

The last key question is whether "anticompetitive conduct" is defined as "conduct without a legitimate business purpose that makes sense only because it eliminates competition."[185] "Anticompetitive conduct" is a common element of "actual monopolization" and "attempter monopolization."[186] Regarding "actual monopolization," the possession of monopoly power is illegal only when "it is accompanied by an element of anticompetitive conduct."[187] Regarding "attempted monopolization," evidence of "anticompetitive conduct" may be used to infer "specific intent to monopolize."[188] In addition, when "monopoly power" is proved, "evidence of anticompetitive conduct may also prove a dangerous probability of success."[189]

179. *Id.* at 496.
180. *Id.*
181. *Id.* (quoting Brown Shoe Co. v. United States, 370 U.S. 294, 325 (1962)).
182. *Id.* at 500 (quoting United States v. E.I. du Pont de Nemours & Co., 351 U.S. 377, 391 (1956)).
183. *Id.*
184. Geneva Pharm. Tech. Corp. v. Barr Labs. Inc., 386 F.3d 485, 501 (2d Cir. 2004) (quotation marks omitted).
185. *In re* Adderall XR Antitrust Litig., 754 F.3d 128, 133 (2d Cir. 2014).
186. *See* W. Concrete Structures Co. v. Mitsui & Co. (U.S.A.), 760 F.2d 1013, 1017–18 (9th Cir. 1985) ("Attempt to monopolize and actual monopolization involve, among other things, intentional predatory or anticompetitive conduct.").
187. *New York ex rel. Schneiderman*, 787 F.3d at651..
188. *See* Nat'l Ass'n of Pharm. Mfrs., Inc. v. Ayerst Labs., Div. of/& Am. Home Prod. Corp., 850 F.2d 904, 915 (2d Cir. 1988).
189. *See id.*

A brand-name drug company may possess monopoly power over its approved new drug if there is no substitutive or generic drug for the approved new drug.[190] A brand-name drug company may hold 100% market share of its approved new drug, especially when the approved new drug is protected by valid patents, and the FDA postpones approval of other generic versions.[191] Therefore, the ultimate question surrounding a Section 2 violation is whether a brand-name drug company engages in anticompetitive conduct.

B. FALSE PATENT INFORMATION SUBMISSION AS ANTICOMPETITIVE CONDUCT

Actos II indicates that submitting false patent information is anticompetitive conduct. First, the Second Circuit held that "[a]n antitrust plaintiff must show that a defendant's *anticompetitive act* was a 'material' and 'but-for' cause of plaintiff's injury, although not necessarily the sole cause."[192] Second, the Second Circuit affirmed that Takeda's mislabeling of the 584 Patent and 404 Patent as drug product patents highly plausibly causes the plaintiffs' damages of not being able to take Teva's generic ACTOS drugs as early as the 777 Patent expired.[193] Therefore, the Second Circuit suggested that Takeda's mislabeling of the 584 Patent and 404 Patent was actually anticompetitive conduct.

Takeda provided alternative causes of delay for Teva's generic ACTOS drugs.[194] First, Takeda alleged that Teva's voluntary settlement with Takeda was conditioned on Teva's staying out of the market until August 2012.[195] Second, Takeda's own citizen petition to the FDA lawfully delayed Teva's ANDA approval.[196] Last, the FDA did not grant Teva's ANDA until 2014.[197]

The Second Circuit considered these alternative causes as possible "barriers to plaintiffs' causation theory at later stages of the litigation."[198] However, the court also stated that "even at summary judgment, an antitrust plaintiff may be entitled to a presumption of causation where the

190. *But cf.* Mylan Pharm. Inc. v. Warner Chilcott Pub. Ltd. Co., 838 F.3d 421, 435–38 (3d Cir. 2016) (finding that the brand-name drug company's market share in the oral tetracycline market never exceeded 18%, because of the interchangeability of the brand-name drug, Doryx, with other oral tetracyclines (including other generic counterparts of Doryx) and the cross-elasticity of demand between those two).

191. *See* Raymond J. Prince, *Pay-for-Delay: How Brand-Name and Generic Pharmaceutical Drug Companies Collude and Cost Consumers Billions*, 68 S.C. L. REV. 689, 725 (2017).

192. *In re* Actos End-Payor Antitrust Litig. (*Actos II*), 848 F.3d 89, 97 (2d Cir. 2017). (emphasis added).

193. *See id.* at 100.

194. *See id.* at 100–01.

195. *See id.* at 100.

196. *See id.* at 100–01.

197. *See id.* at 101.

198. *Id.*

anticompetitive conduct 'is deemed wrongful because it is believed significantly to increase the risk of a particular injury' and that injury occurred."[199] Here, the court implied that submitting false patent information to the FDA is "wrongful." The implication is reasonable, because false patent information significantly increases the risk of delayed launch of generic drugs. As the *Actos II* case has demonstrated, had Teva been able to submit a Section viii statement, Teva's generic ACTOS would have entered the market as soon as the 777 Patent expired.

C. ENFORCEMENT AND STATUTE OF LIMITATIONS

After a brand-name drug company receives FDA approval for its NDA, it enjoys "an exclusivity period, [where] the FDA is barred from approving a generic ANDA for the NDA product."[200] The FDA grants five-year exclusivity, also known as new chemical entity ("NCE") exclusivity, to an approved drug "that contains no active moiety that has been approved by [the] FDA under [21 U.S.C. § 355(b)]."[201] The FDA reduces the five-year exclusivity period to four years, if an ANDA applicant submits a Paragraph IV certification.[202] This exclusivity period begins at the time of NDA approval.[203]

A brand-name drug company may misrepresent a method-of-use patent as a drug product patent at the time of approval of its NDA. But, the anticompetitive conduct delays entry of generic drugs only when a generic drug company can file an ANDA with a Paragraph IV certification at least four years—likely more than five years—after the approval of an NDA. It should be noted that a five-year statute of limitations under 18 U.S.C. § 3282(a) applies to criminal violations of the Sherman Act.[204] Therefore, the question is whether the DOJ can timely indict such illegal brand-name drug company. Cases involving violation of Section 1 of the Sherman Act may help clear the air.

199. *See id.* at 101.

200. AstraZeneca Pharm. LP v. Food & Drug Admin., 872 F. Supp. 2d 60, 64 (D.D.C. 2012).

201. Ctr. for Drug Evaluation and Res., *Patents and Exclusivity*, FDA/CDER SBIA CHRONICLES (May 19, 2015), https://www.fda.gov/downloads/drugs/developmentapprovalprocess/smallbusinessassistance/ucm447307.pdf; *see also* Valerie Junod, *Drug Marketing Exclusivity Under United States and European Union Law*, 59 FOOD & DRUG L.J. 479, 488–89 (2004); Erika Lietzan, *The Myths of Data Exclusivity*, 20 LEWIS & CLARK L. REV. 91, 98 (2016). 21 C.F.R. § 314.3(b) provides that "[a]ctive moiety is the molecule or ion, excluding those appended portions of the molecule that cause the drug to be an ester, salt (including a salt with hydrogen or coordination bonds), or other noncovalent derivative (such as a complex, chelate, or clathrate) of the molecule, responsible for the physiological or pharmacological action of the drug substance." 21 C.F.R. § 314.53(b)(1).

202. *See* Ctr. for Drug Evaluation and Res., *supra* note 201, at 2.

203. *See id.*

204. *See* United States v. Evans & Assocs. Const. Co., Inc., 839 F.2d 656, 661 (10th Cir. 1988).

In *United States v. A-A-A Elec. Co.*,[205] the Fourth Circuit held that "as long as some action is necessary to achieve a conspiratorial objective, a conspiracy, under the Sherman Act or otherwise, continues until the offense has been abandoned or until that objective is accomplished."[206] Thus, the Fourth Circuit concluded that "the statute of limitations begins to run, not from the date of the legally cognizable harm, but from the date of the last overt act."[207]

Similarly, when a brand-name drug company mislabels a method-of-use patent as a drug product patent, this anticompetitive conduct continues until the patent information is corrected. Without correcting this mislabeling, possession of unlawful monopoly power remains. Not correcting the false information also fulfills a brand-name drug company's objective, because generic drug companies cannot file an ANDA with a Section viii statement. Therefore, the statute of limitations should not run from the date of mislabeling. Rather, it should start to run from the date of correction of such mislabeling, because a brand-name drug company continues to violate Section 2 of the Sherman Act until it corrects the mislabeling.

CONCLUSION

When a brand-name drug company submits false patent information to the FDA, it may commit a federal crime under Section 2 of the Sherman Act. *Actos II* implies that mislabeling of a method-of-use patent as a drug product patent is anticompetitive conduct. If a brand-name drug company possesses monopoly power over its approved drug and commits anticompetitive conduct simultaneously, it is likely violating Section 2 of the Sherman Act. This monopolization harms patients' benefits by not allowing generic drug companies to use a Section viii statement to speed up ANDA approval. This unlawfully delays marketing of generics. Patients then must pay monopoly prices. Therefore, the DOJ is urged to prosecute Takeda for such Sherman Act Section 2 violation. Otherwise, the objectives of the Hatch-Waxman Act that encourage generic drugs may be undercut.

205. United States v. A-A-A Elec. Co., Inc., 788 F.2d 242 (4th Cir. 1986).
206. *Id.* at 245.
207. *Id.*