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## Fuel for Thought: Clean Gasoline and Dirty Patents

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# Fuel for Thought: Clean Gasoline and Dirty Patents

## **Keywords**

Patents, gasoline, Federal Reformulated Gasoline Program, Public Policy

# FUEL FOR THOUGHT: CLEAN GASOLINE AND DIRTY PATENTS

SCOTT H. SEGAL\*

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## INTRODUCTION

One of the most successful air pollution control programs devised for use in the United States is the federal reformulated gasoline (RFG) program. By operation of law, the RFG Program applies to the nine smoggiest ozone non-attainment areas, as are defined under the law and regulations of the Clean Air Act.<sup>1</sup> The secret of the success of this program is the careful balance it draws between environmental protection and cost effectiveness. Because RFG does not require changes in automotive technology to be effective,<sup>2</sup> and the changes in price that RFG necessitated have typically been modest,<sup>3</sup> the program has been implemented with a large measure of consumer acceptability. Other controls on mobile source pollution are more problematic, and may force more intrusive changes in consumer behavior.<sup>4</sup> However, when the Court of Appeals for the Federal Circuit recently upheld a challenge to patents on RFG held by the Unocal Corporation,<sup>5</sup> this careful balance of the RFG program was undermined. Appropriate actions must be taken to vindicate environmental, energy, regulatory, and national security policy goals, while being mindful of important intellectual property protections afforded in the United States.

This Article will first examine the background of the RFG program and the Unocal patent case. The Article will then attempt to place the Unocal case in the general context of the current sweep of changes in intellectual property. Thereafter, this Article will examine the conflicts the Unocal case presents with other important public policy objectives, such as environmental, energy, regulatory and national security policy. Finally, the Article will examine potential solutions to the problems presented by the Unocal patent case.

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1. See 42 U.S.C. § 7545(k) (1994).

2. See HISTORY AND OVERVIEW OF THE REFORMULATED GASOLINE PROGRAM: A BRIEFING BOOK FOR MEMBERS OF CONGRESS AND STAFF 2 [hereinafter *OFA Report*] (explaining that RFG utilizes the identical refueling methods as conventional gasoline and has no appreciable affect on vehicle performance). RFG is produced by removing toxic compounds from gasoline and adding more combustible, cleaner burning compounds. *Id.*

3. See *id.* at 4 (reporting that RFG has increased the price of gasoline by only two to four cents per gallon).

4. See *id.* at 13 (maintaining that alternative methods of pollution control such as driving restrictions, mandatory carpools, and additional fees would be far more restrictive to consumers than RFG).

5. See *Union Oil Co. of Cal. v. Atl. Richfield Co.*, 208 F.3d 989, 54 U.S.P.Q.2d (BNA) 1227 (Fed. Cir. 2000) (affirming the decision of the District Court for the Central District of California denying Plaintiffs' motion for Judgment as a Matter of Law that sought to overturn jury verdicts of patent validity and willful infringement).

## I. BACKGROUND OF THE FEDERAL REFORMULATED GASOLINE PROGRAM

Air pollution and air pollution controls have a varied history in the United States. The first air pollution control laws were implemented in Chicago and Cincinnati<sup>6</sup> in 1881 and by 1912 twenty-three of the twenty-eight largest U.S. cities enacted similar laws.<sup>7</sup> Despite the early adoption of laws intended to limit pollution, by the 1950s a public outcry erupted against the ever-growing air pollution.<sup>8</sup> In 1948, in Donora, Pennsylvania twenty people died from air pollution.<sup>9</sup> The deaths and illnesses in Donora led to the initiation of research into the causes and effects of air pollution by the Department of Health, Education, and Welfare, thus beginning the federal government's involvement with monitoring air pollution.<sup>10</sup> Despite public interest and activity by Congress and the Executive branch, primary enforcement was essentially a matter of local ordinance.<sup>11</sup>

The federal government's first attempt to regulate air pollution began with the Clean Air Act of 1963.<sup>12</sup> The Act gave the government limited enforcement abilities to decrease air pollution only when the actions were first approved by the local or state entities.<sup>13</sup> Clearly, stationary source controls could not provide a comprehensive answer. Federal government actors, therefore, turned their attention to mobile sources, albeit initially in a limited fashion.<sup>14</sup> The 1965 Clean

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6. See Martin A. McCrory & Eric L. Richards, *Clearing the Air: The Clean Air Act, GATT and the WTO's Reformulated Gasoline Decision*, 17 UCLA J. ENVTL. L. & POL'Y 1, 4 (1998-1999) (discussing the early development of U.S. pollution legislation); see also FRANK P. GRAD, TREATISE ON ENVIRONMENTAL LAW 7 (1994) (stating that the laws were smoke control regulations aimed at controlling emissions from local industry).

7. See McCrory & Richards, *supra* note 6, at 4 (noting that most of the largest U.S. cities with populations over two hundred thousand have air pollution laws).

8. See *id.* (stating that the unprecedented growth of industry ignited the public's call for air pollution control laws).

9. See Arnold R. Rietze, *A Century of Air Pollution Control Law: What's Worked; What's Failed; What Might Work*, 21 ENVTL. L. 1549, 1585 (1991) (explaining that the city of Donora's heavy industry and topographical features led to the heavy air pollution). The deaths were caused by an "inversion" in which air temperature increased with increasing altitude (whereas normally temperature decreases in such a situation) and pollutants were kept lower to the ground. See *id.*

10. See *id.* at 1585 (noting that the Public Health Service called for air pollution research immediately following the Donora incident).

11. See McCrory & Richards, *supra* note 6, at 4 (maintaining that the initial government role in regulating air pollution was investigatory and informative, and the primary enforcement responsibility remained with state and local governments).

12. See Pub. L. No. 88-206, § 2, 77 Stat. 392 (1963) (codified as amended at 42 U.S.C. §§ 7401-7671 (1995)).

13. See *id.* (providing that, at the request of the state, federal court proceedings would be initiated against polluters).

14. See McCrory & Richards, *supra* note 6, at 5 (explaining that Congress began to consider controls on motor vehicle emissions in 1965).

Air Act Amendments<sup>15</sup> regulated vehicle emissions with an emphasis on the economic and technical feasibility of compliance.<sup>16</sup> The Clean Air Act of 1970<sup>17</sup> required a ninety percent reduction in the emission of hydrocarbons, carbon monoxide, and nitrogen oxide by 1975.<sup>18</sup> The law also changed the chemical composition of gasoline for the first time.<sup>19</sup> Unfortunately these regulations were not enforced by the new Environmental Protection Agency (EPA)<sup>20</sup> and by 1989 mobile sources were the largest single source of air pollution in the United States.<sup>21</sup>

The state of California was one of the first states to regulate mobile sources of air pollution.<sup>22</sup> As early as 1947, California adopted its first air pollution controls.<sup>23</sup> By 1960, California was making its first attempts to regulate automobile emissions.<sup>24</sup> Under the federal system, states are required to enact specific State Implementation Plans in order to ensure compliance with federal ambient air quality standards.<sup>25</sup> In California, this obligation is discharged between the California Air Resources Board and local air pollution control districts.<sup>26</sup> California is the only state that retains a degree of

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15. See Motor Vehicle Air Pollution Control Act, Title I, Pub. L. No. 89-272, 79 Stat. 992 (1965).

16. See *id.* (directing that emissions control regulations should be economically and technically reasonable).

17. Pub. L. No. 91-604, § 202(b)(1)(A), 84 Stat. 1676, 1690.

18. See *id.*

19. See McCrory & Richards, *supra* note 6, at 5 (stating that the Clean Air Act of 1970 set the first standards for the chemical composition of gasoline, targeting lead in particular).

20. See Paul G. Rogers, *The Clean Air Act of 1970*, EPA J. 23 (Jan.-Feb. 1990) (positing that the failure of past pollution regulation, as well as that of the Clean Air Act of 1970, was due to a complete lack of enforcement).

21. See Rep. Henry Waxman, *An Overview of the Clean Air Act Amendments of 1990*, 21 ENVTL. L. 1721, 1768 (1991) (recognizing that motor vehicles play the dominant role in air pollution).

22. See J. KRIER & L. URSIN, POLLUTION & POLICY, A CASE ESSAY ON CALIFORNIA AND FEDERAL EXPERIENCE WITH MOTOR VEHICLE AIR POLLUTION 1940-1975 46-47 (explaining that California was the first to recognize air pollution from motor vehicles and that California pioneered the development of motor vehicle emission regulations).

23. See Cal. Air Resources Board, *California's Air Quality History—Key Events* (reporting that on “June 10, 1947, California Governor Earl Warren signs into law the Air Pollution Control Act, authorizing the creation of an Air Pollution Control District in every county of the state”), available at <http://www.arb.ca.gov/html/brochure/history.htm> (updated Apr. 21, 2000).

24. See *id.* (reporting that the Motor Vehicle Pollution Control Board’s “primary function is to test and certify devices for installation on cars for sale in California” and that by 1961, the California Motor Vehicle State Bureau of Air Sanitation mandated “[t]he first automotive emissions control technology in the nation,” reducing emissions).

25. See 42 U.S.C. § 7410(a) (1994) (passing regulatory responsibility to the states).

26. See CAL. HEALTH & SAFETY CODE §§ 39002, 39500, 40000 (Deering 1995).

autonomy and flexibility under the Clean Air Act system to pursue regulations differing from the federal norm “for the purpose of motor vehicle emission control.”<sup>27</sup>

The Clean Air Act Amendments of 1990<sup>28</sup> required the EPA to devise regulations regarding the makeup of gasoline.<sup>29</sup> The impetus for the amendments of 1990 was fourfold: “America’s increasing dependence on foreign oil, increasing awareness of the large role motor fuel emissions play in the formation of air pollution, interest from agricultural groups, and a desire on the part of Congress to ‘do more than the Administration.’”<sup>30</sup> The legislation contained broad outlines for the RFG Program: limits on heavy metals, a minimum oxygen content, and various performance characteristics.<sup>31</sup> Details were left to the EPA. As will be discussed further, the EPA developed a Regulatory Negotiation (Reg-Neg) process that invited all interested and effected parties to participate in the drafting of requirements for the RFG program.<sup>32</sup> In 1994, the EPA published its RFG Final Rule.<sup>33</sup>

By any measure, the RFG Program has been an environmental success. The RFG Program reduced benzene and limited aromatics,<sup>34</sup> and added larger quantities of oxygenates (principally ethanol and MTBE<sup>35</sup>) to gasoline.<sup>36</sup> The program was implemented on January 1, 1995 for all cities labeled “severe” or higher as “nonattainment” areas.<sup>37</sup> Nonattainment areas were cities that had failed to meet

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27. See 42 U.S.C. § 7545(c)(4)(B) (1994) (permitting California, as a state that regulated automotive emissions before Congress entered the field, to “at any time prescribe and enforce, for the purpose of motor vehicle emission control, a control or prohibition respecting any fuel or fuel additive”). For one of the broadest readings of this provision to date, see *Oxygenated Fuels Ass’n v. Davis*, No. Civ. S. 01-0156 (E.D. Cal. Sept. 4, 2001) (holding that the language of § 7545(c)(4)(B) does not prevent California from banning a fuel if California’s sole purpose is emission control).

28. 42 U.S.C. § 7545(k) (1994).

29. See *id.* (requiring the EPA Administrator to implement regulations governing gasoline content characteristics that are necessary to reduce vehicle emissions).

30. See *OFA Report*, *supra* note 2, at 23.

31. See 42 U.S.C. § 7545(k)(3)-(5) (requiring gasoline to contain at least two percent oxygen to increase combustion efficiency, prohibiting the use of lead, manganese, and other heavy metals, and implementing performance standards).

32. See *OFA Report*, *supra* note 2, at 28 (stating that the EPA invited groups such as gasoline refiners and marketers, state and local pollution officials, environmental organizations, oxygenate suppliers, and consumer groups to develop the regulations surrounding the RFG Program).

33. 59 C.F.R. § 7716 (1999).

34. Aromatics (such as benzene, xylene and toluene) are extremely toxic and carcinogenic pollutants that are used in gasoline as a replacement for lead. See *OFA Report*, *supra* note 2, at 23.

35. Methyl tertiary butyl ether (MTBE) is used in gasoline to replace lead, oxygenate RFG, and reduce harmful fuel emissions. *Id.* at 16.

36. See *id.* at 23 (discussing the benefits of the RFG Program).

37. See *id.* at 24 (describing “non-attainment areas” as cities that have failed to achieve National Ambient Air Quality Standards (NAAQS)).

national ambient air quality standards (NAAQS) due to their high levels of ozone, carbon monoxide (CO), particulate matter (PM), sulfur dioxide, nitrogen dioxide (NO<sub>x</sub>), and lead.<sup>38</sup> The initial areas were Baltimore, Chicago, Greater Hartford, Houston, Los Angeles, Milwaukee, New York, Philadelphia, and San Diego.<sup>39</sup>

The composition of the reformulated gasoline was designed to decrease or eliminate harmful pollutants, and the RFG Program contained provisions that allowed oil companies to determine the most appropriate methods for achieving these targets.<sup>40</sup> In doing so, the RFG Program created an innovation incentive and provided the oil companies with the ability to meet these requirements as economically as possible. The RFG Program also provided a deterrent in a \$25,000 per day fine for violation of its provisions.<sup>41</sup>

Finally, the EPA devised two means of certifying reformulated gasoline.<sup>42</sup> The "simple" model was based on certain parameters that are clearly known to effect emissions and can be computed for a quick estimate of the emissions they will produce.<sup>43</sup> The succeeding "complex" model was computer generated and based on the relationship between levels of fuel parameters and emissions using data from years of testing.<sup>44</sup>

The evolution of environmental protections in the United States demonstrates the increasing levels of pollutants in the air<sup>45</sup> and the country's increasing attention to the threats that these pollutants pose.<sup>46</sup> While plagued through most of its history with lax enforcement and a lack of federal oversight,<sup>47</sup> the implementation of new Clean Air Act regulations and the creation of the Environmental Protection Agency within the last thirty years has resulted in a concerted effort to fight vehicle emissions and air pollution generally.

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38. *Id.*

39. *Id.*

40. See 42 U.S.C. § 7545(k)(4)(B) (approving reformulated gasoline as long as it meets emission requirements).

41. See 42 U.S.C. § 7545(d)(1) (1994).

42. See McCrory & Richards, *supra* note 6, at 10.

43. See *id.* at 11.

44. See *id.*

45. See *id.* at 6-7 (noting that the government responded to the increase in air pollution caused by motor vehicles with extensive regulation).

46. See Reitze, *supra* note 9, at 1590 (stating that the Clean Air Act of 1970 stemmed from growing public interest in pollution control and the emergence of air and water pollution as important national issues).

47. See McCrory & Richards, *supra* note 6, at 6 (stating that the Clean Air Act of 1970 and its precedents were likely to fail because of a lack of enforcement).

## II. AN EXPLANATION OF THE UNOCAL PATENT CASE

### A. *The State of California's Activities*

As discussed above, it is clear that mobile sources have become an increasingly intractable part of air pollution in the United States today. Nowhere has this been more apparent than in the state of California. The prototypical example of intense air pollution is the Los Angeles air basin.<sup>48</sup> In 1988, the California legislature tasked the California Air Resources Board (CARB) with the duty “to achieve the maximum degree of emission reduction possible from vehicular and other mobile sources in order to accomplish attainment of the state ambient air quality standards at the earliest practicable date.”<sup>49</sup> The technical challenges presented by mobile source controls were formidable, such that CARB initiated a consensus-building technical proceeding with stakeholders in order to devise feasible clean fuel standards that could be implemented in a cost-effective way.<sup>50</sup>

In order to facilitate the regulatory process in California, a primary participant in the California proceeding was the Auto/Oil Air Quality Improvement Research Program (Auto/Oil Group), a cooperative research group of the three major auto manufacturers and fourteen major petroleum refining companies.<sup>51</sup> The Auto/Oil Group was formed in 1989, in order to work on the development of RFG and to share research results towards that common end.<sup>52</sup> The Auto/Oil

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48. See GREGG EASTERBROOK, A MOMENT ON THE EARTH: THE COMING AGE OF ENVIRONMENTAL OPTIMISM 181 (1995) (describing Los Angeles traffic as “a profluence of vehicles so extensive it seemed difficult to believe all the factories in the world could create such a mechanical outpouring”). Easterbrook further notes that controls have recently reduced Los Angeles air pollution from a high of 148 ozone alert days in 1988 to 42 such days by 1992. *Id.* Houston is now in close competition with Los Angeles for the air pollution crown. See National Center for Policy Analysis, IDEA HOUSE: REGULATION ISSUES (2001) (stating that “[i]n 1999, Houston had the highest number of days on which it exceeded the EPA’s ozone standard—while L.A.’s number of exceedences fell sharply in 1999 due to unusually cool summer weather.”), available at <http://www.ncpa.org/pd/regulat/pd103000f.html>. But see *Nation in Brief*, WASH. POST, Sept. 27, 2001, at A28 (predicting that “[w]hat the smog gods give, they take away, and this year it appears they will take away the air pollution crown from Houston and return it to Los Angeles. As the summer ozone season peters out, it leaves behind more polluted days in the four-county Los Angeles region this year than in the eight-county Houston area.”).

49. See CAL. HEALTH & SAFETY CODE § 43018(a) (Deering 1995).

50. See CAL. HEALTH & SAFETY CODE § 43018(a)-(c) (Deering 1995).

51. See Unocal Corporation, *Auto/Oil Study Provisions* (2001) (reporting that in October 1989, fourteen U.S. oil companies and the “Big Three” U.S. automakers agreed to develop information on how to reduce vehicle emissions “through improved gasoline formulations, alternative fuels and advances in automobile technology”), available at <http://www.unocal.com/rfgpatent/rfgao.htm>.

52. Auto/Oil Quality Improvement Research Program, *Joint Research Agreement* (Oct. 1989) [hereinafter *Auto/Oil Agreement*] (on file with the author) .

Cooperative Agreement, signed in October of that year, made explicit the pledge that results of the effort would be made public and that no participant would claim such results as proprietary.<sup>53</sup> In part, the Agreement stated that, “No proprietary rights will be sought nor patent applications prosecuted on the basis of the work of the Program unless required for the purpose of ensuring that the results of the research by the Program will be freely available, without royalty, in the public domain.”<sup>54</sup>

In August 1990, CARB issued the “Phase I” RFG regulations, which became effective starting in 1992.<sup>55</sup> These regulations imposed limits on a discrete set of fuel parameters, including Reid vapor pressure (RVP) at 7.8 psi.<sup>56</sup> CARB adopted limited parameters in this initial phase only because it did not possess the full range of data necessary to make final adjustments to fuel specifications,<sup>57</sup> and the fuel did not require the degree of capital investment that would ultimately be required in the Program’s second phase.<sup>58</sup>

At the time of the CARB proceedings, Unocal researchers were conducting screening analyses with the intention of clarifying the relationships between certain gasoline parameters and actual tailpipe emissions.<sup>59</sup> The work was an attempt to correlate very well-known gasoline properties, such as RVP, chemical compositions and distillation, to specific emissions, specifically CO, NOx, and total hydrocarbons.<sup>60</sup> Unocal researchers specifically believed that a particular distillation temperature was a key predictor of CO and

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53. *See id.*

54. *Id.* *See also* Western States Petroleum Ass’n, *How the Unocal Gasoline Patent Hurts California Consumers*, June 1, 2000, stating that

[b]eginning in June 1996 only cleaner-burning gasoline could be sold in California. The cleaner-burning gasoline recipe was hammered out in a series of public workshops attended by oil companies, automobile and environmental organizations. However, at the same time, and without disclosure to the California Air Resources Board or any other stakeholders, Unocal applied for and was granted a patent for gasoline recipes very similar to the complex requirements for California cleaner-burning gasoline.

*available at* <http://www.wspa.org/pr060100.htm>. Interestingly, Western States Petroleum Association is a trade association in which Unocal was a member at the time of the CARB proceeding.

55. *See* CAL. CODE REGS. tit. 13, § 2251.5 (2001) (outlining the basic regulatory standards and control periods for the sale, supply, and transport of gasoline).

56. *See id.* *See also* Cal. Energy Comm’n, *Fuels Report* (Publication Number: P300-95-017, Ch. 3 “Reformulated Fuels and Related Issues” at 24 (1995)) [hereinafter *Cal. Energy Comm’n*] (outlining the chronology of the development of California fuels), *available at* <http://www.energy.ca.gov/reports/95fuelsreport/>.

57. *See Cal. Energy Comm’n, supra* note 56, at 32 (discussing regional use of CARB Phase II RFG).

58. *See id.*

59. *See Auto/Oil Agreement, supra* note 52.

60. *See id.*

hydrocarbons.<sup>61</sup>

This Unocal research, which the corporation intended as proprietary,<sup>62</sup> was then apparently used to influence CARB in the manner specifically envisioned by the cooperative relationship described in the Auto/Oil agreement.<sup>63</sup> Indeed, one of the lead Unocal research scientists wrote to his senior management in November 1990 informing them of the urgency involved in using the information they had gained through their research to yield competitive advantages in the marketplace and to influence CARB in its development of regulation.<sup>64</sup> The Unocal researcher candidly observed that several of the other Auto/Oil participants previously discovered the significance of the distillation relationship and that CARB was on the verge of taking action of its own accord.<sup>65</sup>

Unocal researchers continued to develop strategy for Unocal management that involved concealment of proprietary interest coupled with continued participation in the cooperative effort underway with regard to the CARB proceedings.<sup>66</sup> They advised that it would be in Unocal's best interest to work closely with the EPA and CARB to shape regulations.<sup>67</sup> Specifically, Unocal researchers warned that Unocal must "retain secrecy of data" while "leav[ing] the door open for" the company to secure a "competitive advantage" based on the distillation factors as an RFG parameter.<sup>68</sup> If the competitive advantage in question should manifest itself in "licensing agreements with competitors," they reasoned, the patents "could be worth 10's of millions of dollars every year, far more than any other competitive advantage could yield."<sup>69</sup>

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61. *See id.* (discussing research models).

62. *See* Memorandum from M.C. Croudace to J.W. Miller 1 (Nov. 27, 1990) (highlighting the influential relationship the corporation had over CARB) (on file with author).

63. *See id.*

64. *See id.*

65. *See id.*

66. *See id.*

67. *See id.*

68. *See* Memorandum from M.C. Croudace & P.J. Jessup to J.W. Miller 3 (Dec. 11, 1990) (on file with author).

69. *Id.* As fantastic as the researchers' scenario may have seemed to some in Unocal senior management, reality was even stranger. The royalty rate established by the jury in the Los Angeles federal court was 5.75 cents per gallon, some 60 times higher than Croudace and Jessup originally predicted. *See, e.g.,* Lawrence Kumins, *RL30592: Midwest Gasoline Prices: A Review of Recent Market Developments*, CONG. RESEARCH SERV. REP. FOR CONG. (June 28, 2000) (summarizing the procedural history in the case filed by six major refiners against Unocal challenging the validity of Unocal's patents), available at <http://www.cnie.org/nle/eng-62.html>.

On December 13, 1990, Unocal filed its initial patent application with the U.S. Patent and Trademark Office.<sup>70</sup> The application described relationships between gasoline parameters and emissions control in directional and qualitative ways.<sup>71</sup> Because the patent application describes ranges of parameters, rather than specific numbers, the patent lends itself to innumerable possible permutations among the various parameters.<sup>72</sup> With such a range of permutations encompassed within the patent application, it is clear that the patent was an attempt to “mix and match” final parameters in order to track the result ultimately to be mandated by CARB.<sup>73</sup> Indeed, Unocal’s patent set an olefin limit that captured all formulations below fifteen percent, which was CARB’s limit already.<sup>74</sup> Further, CARB’s already applicable RVP limit was 7.8 psi; the Unocal approach attempted to patent RVP parameters below 8 psi.<sup>75</sup>

It is apparent that throughout 1991 CARB met with Unocal at the company’s request.<sup>76</sup> Specifically, Unocal advocated the use of predictive models.<sup>77</sup> CARB never knew that Unocal’s position was based upon proprietary data, and was significantly distressed when news of the patent came to light later.<sup>78</sup> On August 17, 1991, Unocal

70. See U.S. Patent No. 5,288,393 (issued Feb. 22, 1994).

71. See *id.* (outlining the technical details of the patent).

72. See *id.* See, e.g., Nat’l Petrochemical & Refiners Ass’n, *Washington Bulletin: Refiners in Unocal Patent Case File Petition for Rehearing* (Apr. 28, 2000) [hereinafter *Washington Bulletin*] (noting that the “written description . . . falls far short of ‘full, clear, concise, and exact terms,’ and court action is necessary to ‘prevent patentees in the future from doing what Unocal has done here—file an application [encompassing one trillion possible combinations] in anticipation of regulation that encompasses every conceivable future regulatory requirement,’ and then charge others 5.75 cents a gallon to use it.”), available at <http://www.npradc.org/publications/wb/4-28-00.html>.

73. See *Washington Bulletin*, *supra* note 72 (suggesting that Unocal sought to patent such general technology to ensure it would have a competitive advantage no matter what the final CARB regulation required).

74. See U.S. Patent No. 5,288,393 (issued Feb. 22, 1994) (defining olefin limit).

75. See *id.* (defining RVP limit); see also Petroleum Transp. & Storage Ass’n, *PTSA Weekly Update* (Feb. 23, 2001), available at [http://www.tpca.org/memberonly/PTSA%20Updates/ptsa\\_022301.htm](http://www.tpca.org/memberonly/PTSA%20Updates/ptsa_022301.htm) (stating the majority industry position that “RFG was the product of a regulatory rulemaking by CARB, which Unocal subsequently claimed as its own.”).

76. Brief for Respondents in Opposition at 4, *Atl. Richfield Co. v. Union Oil Co. of Cal.*, 531 U.S. 1183 (2001) (No. 00-249) (“In June 1991, CARB officials met with [Unocal scientists], who disclosed their research data and urged CARB to fashion their regulations in a way that allowed refiners flexibility in how to reach the desired results.”). Such “flexibility” is typically synonymous with predictive approaches.

77. *Id.*

78. Brief for the States as Amici Curiae at 4-5, *Atl. Richfield Co. v. Union Oil Co. of Cal.*, 531 U.S. 1183 (2001) (No. 00-249) (“Unocal did not develop its patent after the regulations were adopted, as a consequence of a technology-forcing legal requirement. Nor did Unocal disclose the patent to the State of California, so that the State could take the patent into account in deciding whether to adopt the regulations. Rather, Unocal kept the patent application, its amendment, and the

again appeared to accept this premise. Unocal's Manager of Planning wrote to CARB, "[p]lease be advised that Unocal now considers this data to be nonproprietary and available to CARB, environmental interest groups, other members of the petroleum industry, and the general public upon request."<sup>79</sup> It is a small wonder, then, that CARB and others were surprised to learn of Unocal's patent gambit given its representations, its participation in the Auto/Oil Agreement, and its membership in relevant trade associations.<sup>80</sup>

The significance of Unocal's public persona of civic-mindedness and lack of proprietary interest cannot be overstated in reference to the actions of CARB. In order to determine which fuel parameters are cost-effective as the premise for regulation, CARB had to have a realistic view of the actual costs associated with the mandates.<sup>81</sup> In addition, the environmental results themselves are subject to some speculation in the sense that minor alterations in parameters may not result in substantial differences in environmental performance.<sup>82</sup> Therefore, establishing bright lines in environmental policy can often be usefully described as "more art than science," even by experts.<sup>83</sup> In light of this uncertainty, it may be reasonable to assume that if CARB had known of the true consequences of its actions with regard to potential intellectual property concerns, it might have adopted slightly different standards.<sup>84</sup>

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patent itself secret until after the regulations were finalized—*while Unocal was discussing, with its competitors and the State of California, what form the California regulations should take.*") (emphasis in original).

79. Letter from D.W. Lamb, Unocal Manager of Planning, to J.D. Boyd, Executive Officer, CARB (Aug. 27, 1991) (on file with author).

80. See Minutes of Auto/Oil Research Program Committee Meeting, Sept. 25-26, 1991, at 10 (documenting a subsequent September 1991 meeting between Unocal and the research group constituted under the Auto/Oil agreement) (on file with author). Indeed, one of the "inventors" listed on the patent application "explained that the data from Unocal's research has been provided to CARB and is in the public domain." *Id.*

81. See Rogelio Garcia, *Federal Regulatory Reform: An Overview*, CONG. RESEARCH SERV. REP. FOR CONG. (Oct. 24, 2000) (explaining that cost-effectiveness, which assesses how a goal can be achieved at the least cost, is a better measure than cost-benefit analysis, which analyzes the costs of alternatives), available at <http://www.cnire.org/nle/rsk-3.html>. "In contrast to cost-benefit analysis, the concern [with cost-effectiveness analysis] is not with weighing the merits of the goal, but with analyzing the costs of alternatives to reach that goal." *Id.*

82. See *id.*

83. See Nell Ahl, *Director's Corner*, ORACBA NEWS. 1 (Sept.-Oct. 1996) (confirming agency position through USDA Office of Risk Assessment & Cost Benefit Analysis that bright-line rules are ineffective in determining the exact point between what is safe and what is negligent and consequently, risk assessment should establish guidelines rather than absolutes), available at <http://www.usda.gov/agency/oce/oracba/newsletter/newslet3.htm>.

84. Unfortunately, the likely reaction of CARB if it had known of Unocal's patent

Unocal participated in the formulation of cost-effective conclusions with CARB directly and through its participation in broader industry efforts.<sup>85</sup> It is difficult to understand how Unocal could have been supplying relevant cost information in good faith and at the same time failing to disclose its patent applications. The President of Unocal Refining Roger C. Beach wrote to the Chair of CARB in November 1991 stressing Unocal's opposition to regulations that are not cost effective.<sup>86</sup>

At the close of its proceeding, CARB adopted Phase II California RFG with specifications for eight specific fuel parameters.<sup>87</sup> Going beyond Phase I federal RFG, the program was anticipated to cost substantial amounts for capital investment in production.<sup>88</sup> Thereafter, CARB began to develop its predictive model.<sup>89</sup> When Phase II California RFG was announced, Unocal began a program to amend its patents in order to better conform with the regulatory standards.<sup>90</sup>

Particularly instructive is the cross-examination of a Unocal research team member, Dr. Peter J. Jessup. When asked whether the patent was changed after the CARB regulations came out, Dr. Jessup explained that some claims were narrowed to resemble the regulations, but insisted that they were not copied from the regulations.<sup>91</sup>

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application is only speculative, because at the time of the application and through the period relevant to CARB consideration, the patent application was confidential. In 1999, however, Congress changed the law to provide for the general publication of patent applications within eighteen months of their filing. *See* 35 U.S.C. § 122 (2000).

85. *See Auto/Oil Agreement, supra* note 51.

86. *See* Letter from R.C. Beach, President, Unocal Refining, to J. Sharpless, Chair, CARB (Nov. 21, 1991) (stating that "[w]hile Unocal is not against the concept of gasoline reformulation, we are strongly opposed to the imposition of measures that are not cost effective") (on file with author).

87. *See Cal. Energy Comm'n, supra* note 56, at 23-24, 26-30 (describing California Phase II RFG).

88. *See id.*

89. *See id.*

90. Cross-examination of Unocal Research Team, *Union Oil Co. of Cal. v. Atl. Richfield Co.*, 34 F. Supp. 2d 1208 (C.D. Cal. 1998) (No. CV-95-2379, Trial Tr. 506) (revealing that the research team modified the patent to meet CARB regulatory standards).

91. *See id.* The following is an excerpt of the questioning of Dr. Jessup who was asked:

After the CARB regulations . . . came out in November of 1991, were the claims that still remained in your patent changed completely to copy the RVP, the T50, and the olefin numbers of the Air Resources Board regulations?" Dr. Jessup responded: "Some of our claims were narrowed. Some of our claims were broader than the CARB regulations. Some of them were narrowed at various times to resemble the CARB regulations, but they were never copied from the CARB regulations."

Indeed, over a period of time, Unocal's conforming amendments captured almost any practicable formulation for meeting the CARB regulations.<sup>92</sup> This is the case even for fuel parameters previously inconsistent with the teaching of the patent.<sup>93</sup> For example, when CARB failed to embrace a zeroing out of olefins in the clean fuel pool (as Unocal had previously recommended), the patent was amended to mirror the higher levels of olefins upon which CARB ultimately settled—a directional inconsistency with the original patent's approach.<sup>94</sup> Unocal officials understood the implications for CARB RFG when they made the patent known *only after* the capital investments and refinery modifications were underway *and* the patent had been awarded. This fact is clearly indicated by Unocal Spokesman Barry Lane: “[w]e believe that almost any gasoline that would be practical to make and meet the state requirements would fall under the scope of our patent.”<sup>95</sup>

### B. Federal Activities

While CARB was underway with its regulatory process to develop clean California fuels, the Environmental Protection Agency (EPA) was in the midst of a similar and related effort under the federal Clean Air Act for ozone nonattainment areas.<sup>96</sup> As discussed above, the RFG program was the result of a confluence of political actions. It had been well-recognized prior to 1990 that so-called tailpipe emissions standards for automobiles (i.e., solutions predicated on changes in automotive technology) would only be a partial solution because “no matter how effective automobile antismog devices became, some portion of the inherent pollution content of gasoline would always exit the tailpipe.”<sup>97</sup> While recent notable cases have

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*Id.* (on file with author).

92. Compare U.S. Patent No. 5,288,393 (issued Feb. 22, 1994), *supra* note 70, with CAL. CODE REGS. tit. 13, § 2251.5 (2001) (displaying the similarities between the CARB regulations and the Unocal patent).

93. *Id.*

94. See U.S. Patent No. 5,288,393 (issued Feb. 22, 1994), *supra* note 70.

95. See Liz Mullen, *Unocal Vows Not to Disrupt Cleaner Gas Debut: War Over Patent for Formula May Surface Later*, L.A. BUS. J., Apr. 10-16, 1995, at 10.

96. See 42 U.S.C. § 7545 (1994) (outlining the EPA Administrator's authority to designate fuel and fuel additives through regulation); 42 U.S.C. § 7545(k)(1) (indicating that only reformulated gasoline may be sold in nonattainment areas); see also *George E. Warren Corp. v. United States E.P.A.*, 159 F.3d 616, 618 (D.C. Cir. 1998) (stating that “[t]he Clean Air Act Amendments of 1990 require the reformulation of conventional gasoline to reduce motor vehicle emissions in certain large urban regions with elevated levels of ozone.”).

97. See Easterbrook, *supra* note 48, at 196; see also Arnold W. Reitze, Jr., *Mobile Source Air Pollution Control*, 6 ENVTL. LAW. 309, 314-18 (2000) (detailing the history and development of the EPA's regulation of pollution emissions from mobile sources); Murray Tabb, *Twenty-Five Years of the Clean Air Act in Perspective*, 10 NAT.

reinforced the federal Clean Air Act's prohibition against consideration of cost in standard settings,<sup>98</sup> the EPA's statutory authority for the RFG program is notably different, explicitly calling for cost considerations in emission reduction regulations.<sup>99</sup>

It is clear that although the primary responsibility of the EPA in establishing standards for RFG pertains to the environmental performance of the program, the EPA can and must take costs, as reflected in gasoline price and supply, into consideration when implementing the program.<sup>100</sup> Indeed, the fuels program is a paradigm case where consumer acceptability of the control is functionally related to the success of the program and to the price of the product.<sup>101</sup> Cost considerations, therefore, serve the broader social interest in the program.<sup>102</sup>

Along with considering costs, the EPA had to include fifteen

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RESOURCES & THE ENV'T NO. 2, 13, 18-19 (1995) (examining the debates that have surrounded the Clean Air Act since its passage).

98. See, e.g., *Whitman v. Am. Trucking Ass'ns*, 121 S. Ct. 903 (2001) (following the statutory interpretation that bars cost considerations when setting National Ambient Air Quality Standards (NAAQS)).

99. See 42 U.S.C. § 7545(k)(1) (1994) stating that:

such regulations shall require the greatest reduction in emissions of ozone forming volatile organic compounds (during the high ozone season) and emissions of toxic air pollutants (during the entire year) achievable through the reformulation of conventional gasoline, taking into consideration the cost of achieving such emission reductions, any nonair-quality and other air-quality related health and environmental impacts and energy requirements.

100. See *George E. Warren Corp. v. United States E.P.A.*, 159 F.3d 616, 623 (D.C. Cir. 1998) (deferring to the agency's interpretation of the statute and allowing consideration of the effect the proposed rule may have on the price and supply of gasoline); *NRDC v. E.P.A.*, 824 F.2d 1146, 1157 (D.C. Cir. 1987) (en banc) (interpreting the Clean Air Act to allow for consideration of cost); *Int'l Bhd. of Teamsters v. United States*, 735 F.2d 1525, 1529 (D.C. Cir. 1984) (deferring to agency interpretation unless there is a clear congressional mandate that forbids such interpretation); see also *Grand Canyon Air Tour Coalition v. F.A.A.*, 154 F.3d 455, 475 (D.C. Cir. 1998) (upholding F.A.A. interpretation of the statute because the statute itself does not prohibit such interpretation).

101. The RFG program has become a key government air quality strategy, at least in part due to its cost-effectiveness. See U.S. EPA, *Study of Boutique Fuels and Issues Relating to Transition from Winter to Summer Gasoline*, Oct. 2001, at 1,

Cleaner fuels have been an integral component of the nation's strategy to reduce smog forming emissions and other harmful pollutants, including air toxics from our nation's air. Specifically, the reformulated gasoline program (RFG), which began in 1995, has been cost effective and has provided significant and immediate reductions in air pollution levels throughout the nation.

available at [www.epa.gov/otaq/regs/fuels/r01051.pdf](http://www.epa.gov/otaq/regs/fuels/r01051.pdf).

102. For a broader discussion of the relationship between Clean Air Act cost and the underlying social policy of the statute, see, e.g., Brief for Amicus Curiae Am. Boiler Mfg. Ass'n at 3, *Whitman v. Am. Trucking Ass'ns*, 121 S. Ct. 903 (2001) (explaining that Congress explicitly called for cost considerations and noting that it is crucial that cost considerations are "overt" and "accurate" in this age of "diminishing returns" regarding environmental regulations).

percent reductions in emissions of volatile organic compounds and toxic air pollutants as a measure of Phase I of the federal RFG program (1995-2000), and twenty-five percent reductions thereafter in Phase II, beginning in 2001.<sup>103</sup> In order to meet this schedule and grapple with the significant technical issues at play, the EPA sponsored a regulatory negotiation (Reg-Neg) to bring interested parties together on a cooperative basis.<sup>104</sup> The purpose of the Reg-Neg was explained by the Congressional Research Service:

In the months following enactment of the CAAA, EPA and the other interested parties agreed on a process called a regulatory negotiation, shortened to “reg neg”, covering the reformulated gasoline program mandated by the Act. This negotiation was intended to keep the potentially controversial regulations out of the courts, and to avoid future congressional involvement, by obtaining agreement among all interested parties before the regulations were written. EPA would then write the regulations, but this would presumably be a straightforward and noncontroversial task, embodying the principles already agreed to in the negotiated agreement.<sup>105</sup>

While the EPA did not have extensive experience with the Reg-Neg process at this time, the concept would be tested by the exigencies of the federal RFG case. After substantial negotiations, a final agreement was reached by August 1991 and signed by all parties.<sup>106</sup> The EPA then revealed its outline of federal RFG regulations in April 1992, based in large measure on the Reg-Neg.<sup>107</sup> The formidable Reg-Neg process had taken over six months to complete and involved thirty parties, all of whom signed off on the results.<sup>108</sup>

The Phase I federal RFG regulations relied upon the so-called

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103. See 42 U.S.C. § 7545(k)(3)(B) (1994) (detailing the performance standards for both VOC emissions and toxics for a fifteen percent to twenty-five percent reduction).

104. See Migdon Segal, *Ethanol and Clean Air: The ‘Reg-Neg’ Controversy and Subsequent Events*, CONG. RESEARCH SERV. REP. FOR CONG. (1993) (describing the Reg-Neg process as an agreement reached by the participating parties that was later codified in the formal regulations), available at <http://www.cnie.org/nle/crsreports/air/air-7.html>.

105. See *id.*

106. See *id.* (detailing the parties who participated in the Reg-Neg process, including the oil industry, automobile industry, environmental movement, and federal and state government bodies).

107. See *id.* (noting some measure of concern with the Reg-Neg process because the EPA utilized it infrequently).

108. See *id.* (citing *Final Agreement Reached on Reformulated Gasoline and Oxygenated Fuels Rules*, NEW FUELS REP., Aug. 19, 1991, at 3; *E10-NOx Impasse Broken; Reg Neg Agreement Inked*, OXY-FUEL NEWS, Aug. 19, 1991, at 1) (stating that because all parties agreed upon principles determined during negotiations that were later detailed in the regulations, preparing the regulations was “a straightforward and noncontroversial task”).

“simple model” for establishing baseline compliance, based upon a recipe that included oxygen content, benzene controls, heavy metal and aromatic content, and RVP.<sup>109</sup> By contrast, the more stringent “complex model” for Phase II federal RFG is based upon a complex set of mathematical formulations, based in part on RVP, distillation and olefin levels (among other characteristics).<sup>110</sup> In this respect, it can be said that the Phase II federal RFG is similar in kind and properties to the predictive model used by CARB.

The complex model was developed by a process beginning with Reg-Neg, but proceeding through the full range of public participation necessitated by administrative procedure. In 1992 and 1993, the EPA held numerous public workshops on RFG and solicited public comment.<sup>111</sup> In 1994, the EPA adopted its final RFG rules.<sup>112</sup> Again, Unocal participated broadly in the Reg-Neg and rulemaking processes, without disclosure of its patent claims, which led the patents to present as much a problem for the EPA as they did for CARB.<sup>113</sup>

### C. *The Unocal Patents*

Until this point the only patent discussed has been the ‘393 patent, because it is already subject to litigation and is most troubling for purposes of the above analysis. However, as Unocal President Roger Beach observed, “Unocal’s patents ‘may have application throughout the U.S., not just California.’”<sup>114</sup> Indeed, Unocal has several similar patents.<sup>115</sup> Unocal holds five sequential utility patents<sup>116</sup> on various

109. See Segal, *supra* note 104, available at <http://www.cnie.org/nle/crsreports/air-7.cfm> (noting that the “simple model” proposed by the EPA would apply for the first two years of the RFG Program).

110. See 40 C.F.R. § 80.45 (2000) (detailing the terms, standards, and equations necessary to properly utilize the complex emissions model).

111. See Segal, *supra* note 104 (discussing the extensive comments received by the EPA regarding the new proposed regulations).

112. See *Regulation of Fuels and Fuel Additives: Standards for Reformulating Conventional Gasoline*, 59 Fed. Reg. 7716 (Feb. 16, 1994) (codified at 40 C.F.R. pt. 80) (stating that the regulations for reformulated gasoline would go into effect on March 18, 1994).

113. See Unocal Corporation, *Unocal’s RFG Patents: A New Approach to Clean Air* (2001) (illustrating how Unocal views the patents’ applicability to CARB and EPA requirements and helps refiners, blenders, and importers comply with each), available at <http://www.unocal.com/rfgpatent> (last modified June 5, 2000) [hereinafter *Unocal’s RFG Patents*].

114. See *Unocal Wins Again in RFG Patent Case*, OIL DAILY, Mar. 30, 2000, at 1 (on file with author).

115. See *Unocal’s RFG Patents*, *supra* note 113 (listing all five Unocal patents for reformulated gasoline), available at <http://www.unocal.com/rfgpatent/patents.com> (last visited Oct. 1, 2001).

116. Utility patents are issued for compositions of matter, which include chemical compositions. See 35 U.S.C. § 101 (1994).

compositions of reformulated gasoline. The filing and issuance dates, as well as the patent numbers, follow:

PATENT NUMBER	APPLICATION DATE	ISSUE DATE
5,288,393	Dec. 13, 1990	Feb. 22, 1994
5,593,567	Mar. 22, 1995	Jan. 14, 1997
5,653,866	June 5, 1995	Aug. 5, 1997
5,837,126	Aug. 1, 1997	Nov. 17, 1998
6,030,521	Nov. 13, 1998	Feb. 29, 2000

Under 35 U.S.C. § 154, patents issued before June 8, 1995 are effective for seventeen years.<sup>117</sup> For patent applications received before June 8, 1995 and issued after June 8, 1995, the patent life is either twenty years from the application date or seventeen years from the issue date, whichever time period is longer.<sup>118</sup> Finally, for patents applied for and issued post-June 8, 1995, the patent life is twenty years from the date of application.<sup>119</sup>

Even though the '393 patent (granted on February 22, 1994) was the basis of litigation, a second broader patent—the '126 patent—was awarded to Unocal on November 17, 1998.<sup>120</sup> "Taken together," writes noted petroleum economist Philip K. Verleger, "the '393 and the '126 patents may apply to all, or almost all, reformulated and low-RVP gasoline marketed in the United States."<sup>121</sup>

The '126 patent is worthy of some independent discussion because it apparently addresses an important shortcoming in the broad '393 patent. The '393 patent ostensibly applies to petroleum refiners, and not to gasoline made outside the factory gate.<sup>122</sup> Because the final formulation of a substantial amount of gasoline occurs at blending operations, a potential loophole exists in the '393 patent because it is silent as to distribution.<sup>123</sup> The '126 patent remedies the potential

117. See 35 U.S.C. § 154(a)(2) (1994) (stating that today, in general, a patent's term lasts twenty years from the date an application is filed).

118. See *id.* § 154(c)(1) (noting that this time frame is based largely on the enactment of the Uruguay Round Agreement Act).

119. See *id.*

120. See U.S. Patent No. 5,837,126 (issued Nov. 17, 1998) [hereinafter *126 Patent*].

121. Philip K. Verleger, Jr., *The Unocal Patents*, PETROLEUM ECON. MONTHLY, Apr. 2000, at 2 (on file with author); see also *New Unocal Gasoline Patent Could Have Broader Application for U.S. Refiners*, Dec. 9, 1998, at 1 (quoting Unocal Chairman and Chief Executive Officer Roger Beach as explaining that the patent provides broader protections for clean burning fuels), available at <http://www.unocal.com/rfgpatent/rfgnr6.htm> (last visited Oct. 1, 2001) [hereinafter *Unocal News Release*].

122. See *Unocal News Release*, *supra* note 121, available at <http://www.unocal.com/rfgpatent/rfgnr6.htm> (noting that the '393 patent has particular application to gasolines manufactured to comply with California's Phase II regulations).

123. See *id.* (explaining that the '126 patent will have national implications because it closes a loophole created by the '393 patent).

loophole by including claims regarding blending of more than 50,000 gallons at a time, as well as more general claims regarding product distribution.<sup>124</sup>

#### *D. Federal Litigation*

In 1998, the plaintiffs, “Refiners,”<sup>125</sup> sought declaratory judgment against the defendant, Unocal, to invalidate Unocal’s ‘393 patent.<sup>126</sup> Unocal counterclaimed, alleging willful infringement of the ‘393 patent.<sup>127</sup> The district court converted the Refiners’ declaratory judgment action into an infringement defense, and tried the invalidity issues to a jury.<sup>128</sup> The jury answered a special verdict form affirmatively, finding the ‘393 patent to be valid.<sup>129</sup> The Refiners then moved for Judgment as a Matter of Law (JMOL) to overturn the jury’s verdict based on the patent application’s anticipation, obviousness, and lack of written description.<sup>130</sup> The district court rejected these arguments.<sup>131</sup>

The case was complicated; the original finder of fact considered over 400 trial exhibits and demonstrations and heard testimony from 17 technical witnesses.<sup>132</sup> The trial court’s special verdict form asked the jury 222 individual questions.<sup>133</sup> The trial lasted forty-nine days, and the jury deliberated for thirteen days, ultimately finding in favor

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124. *See id.* (stating that the new patent outlines sixty-six additional claims addressing numerous combinations of properties, production, and distribution methods).

125. *See* Union Oil Co. of Cal. v. Atl. Richfield Co., No. CV-95-2379-KMW, 1998 U.S. Dist. LEXIS 22847, at \*1 (C.D. Cal. Mar. 6, 1998) (showing the plaintiffs in the case included Atlantic Richfield Company, Chevron U.S.A. Inc., Exxon Corporation, Mobil Oil Corporation, Shell Oil Products Company, and Texaco Refining and Marketing, Inc.).

126. *See id.* at \*3-5 (discussing the multiple arguments presented by the plaintiffs to invalidate the 393 patent).

127. *See id.* at \*5 (noting that the patentee has the burden of proving infringement by a preponderance of the evidence).

128. *See id.* (determining that literal infringement is a question of fact specifically set for the jury).

129. *See id.* (reporting that the jury found that the plaintiffs’ gasoline infringed on the ‘393 patent).

130. *See id.* (discussing the claims raised in the motion for JMOL, which included invalidating the patent for failure to establish the invention date and lack of enablement).

131. *See* Union Oil Co. v. Atl. Richfield Co., No. CV-93-2379-KMW, 1998 U.S. Dist. Lexis 22847, at \*5 (C.D. Cal. Mar. 6, 1998) (holding that “this court does not find any reason to overturn the jury’s factual finding on this issue, and cannot issue a contrary ruling of law”).

132. *See id.* at \*3 (mentioning that due to the complexity, the court was hesitant to disturb the jury’s decisions).

133. *See id.* at \*3 (illustrating the care which the jury gave to weighing the evidence).

of the defendant Unocal.<sup>134</sup>

In a separate proceeding,<sup>135</sup> the Refiners argued that the patent was unenforceable for inequitable conduct.<sup>136</sup> The district court held that the Refiners did not meet their burden of showing inequitable conduct by clear and convincing evidence.<sup>137</sup>

In July 1999, the Refiners appealed the district court's denial of JMOL on anticipation and written description, as well as the district court's inequitable conduct decision, to the Court of Appeals for the Federal Circuit.<sup>138</sup> Finding that the record contained substantial evidence to support the jury's verdict of no anticipation and sufficient written description, the appellate court affirmed the district court's denial of JMOL.<sup>139</sup> Additionally, the appellate court affirmed the district court's inequitable conduct determination.<sup>140</sup>

The Refiners appealed the Federal Circuit decision to the U.S. Supreme Court. The Court requested formally that the Solicitor General file an amicus brief stating the opinion of the United States on the certiorari petition.<sup>141</sup> The Solicitor General argued that the case did not present novel issues for the High Court's consideration,<sup>142</sup> and on February 20, 2001, the U.S. Supreme Court denied without comment the Refiners' petition.<sup>143</sup>

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134. See *id.* at \*3 (noting that the time spent during the trial was allocated primarily to the liability issue).

135. See *Union Oil Co. v. Atl. Richfield Co.*, 34 F. Supp. 2d 1208 (C.D. Cal. 1998).

136. See *Molins PLC v. Textron, Inc.*, 48 F.3d 1172, 1178, 33 U.S.P.Q.2d (BNA) 1823, 1826 (Fed. Cir. 1999) (defining inequitable conduct as an "affirmative misrepresentation of a material fact, failure to disclose material information, or a submission of false material information, coupled with an intent to deceive"); see also 37 C.F.R. § 1.56 (2000) (noting that a patent applicant has a duty of candor when presenting a patent before PTO, and failure to meet this duty can strip the patent of its enforceability). See generally Robert J. Goldman, *Evolution of the Inequitable Conduct Defense in Patent Litigation*, 7 HARV. J.L. & TECH. 37 (1993) (discussing the history and utilization of the inequitable conduct defense).

137. See *Union Oil Co. v. Atl. Richfield Co.*, 34 F. Supp. 2d 1208, 1222 (C.D. Cal. 1998) (concluding that the evidence of good faith outweighed evidence of intentional deception).

138. See *Union Oil Co. v. Atl. Richfield Co.*, 208 F.3d 989, 991, 54 U.S.P.Q.2d (BNA) 1227, 1228 (Fed. Cir. 2000) (outlining the procedural history of the case).

139. See *id.*, 54 U.S.P.Q.2d (BNA) at 1228 (stating that the appellant failed to show a reversible flaw in the jury's verdict).

140. See *id.*, 54 U.S.P.Q.2d (BNA) at 1228 (affirming the district court's decision on the basis of the trial court's discretionary judgment).

141. See *Atl. Richfield Co. v. Union Oil Co.*, 121 S. Ct. 338 (2000).

142. See *infra* Part V (detailing the Solicitor General's arguments).

143. See *Atl. Richfield Co. v. Union Oil Co.*, 121 S. Ct. 1167 (2001). For a discussion of the energy market's reaction to the Supreme Court's denial of certiorari, see *Patent Verdict Will Lift Summer Gas Prices*, PETROMART BUS. (Feb. 21, 2001) (discussing the Supreme Court's decision and speculating about the effect it would have on both the industry and consumers), available at <http://www.petromartbusiness.com/hotnews/12h21112040.htm> (last visited Oct. 1, 2001).

### III. THE UNOCAL PATENT CASE AND CURRENT TRENDS IN INTELLECTUAL PROPERTY

The Unocal patent case did not take place in a vacuum of intellectual property law or Federal Circuit precedent. Rather, the case can properly be viewed as a troubling example of emerging patent treatment in the Federal Circuit, ever pushing the envelope on what art is legitimately patentable. With the emergence of cutting-edge issues in intellectual property, such as information concerns related to software development<sup>144</sup> or live-organism concerns related to biotechnology,<sup>145</sup> intellectual property has re-emerged as one of the hot topics in modern jurisprudence.<sup>146</sup> As one commentator observed:

Not long ago, intellectual property was a somewhat eccentric and arcane area far from the center stage of American law and best left to technical experts. However, in the last few decades, intellectual property law and policy have moved to the front of the legal agenda in controversies both within and between nations.<sup>147</sup>

The current ascendancy of intellectual property interest is reflected in according patents ever greater protections,<sup>148</sup> even if competition is thereby restricted.<sup>149</sup> Historically, the treatment of both antitrust and

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144. See, e.g., Patrick K. Bobko, *Open-Source Software and the Demise of Copyright*, 27 RUTGERS COMPUTER & TECH. L.J. 51, 51-52 (2001) (discussing the debate regarding software in the context of copyright law); Pamela Samuelson et al., *A Manifesto Concerning the Legal Protection of Computer Programs*, 94 COLUM. L. REV. 2308, 2310 (1994) (noting the extensive academic and public debate surrounding computer software in an intellectual property context).

145. See Reagan Anne Kulseth, *Biotechnology and Animal Patents: When Someone Builds a Better Mouse*, 32 ARIZ. L. REV. 691, 706-07 (1990) (outlining the public's moral concerns over patenting live animals); Robert P. Merges, *Intellectual Property in Higher Life Forms: The Patent System and Controversial Technologies*, 47 MD. L. REV. 1051, 1061 (1988) (discussing the debate between those wishing to patent live organisms and opposing animal rights activists).

146. See Justin Hughes, *'Recoding' Intellectual Property and Overlooked Audience Interests*, 77 TEX. L. REV. 923, 925 (1999) (noting that "there is no question that intellectual property is a 'hot' practice area, . . . and that [these] property notions are being applied - implicitly and explicitly—to a wider variety of social issues").

147. See Keith Aoki, *The Stakes of Intellectual Property Law*, in THE POLITICS OF LAW: A PROGRESSIVE CRITIQUE 259 (David Kairys ed., 1998); see also Judith Maas, *Bookshelf: A Selection of Recent Management Books*, 41 MIT SLOAN MGMT. REV. 8, para. 17 (Winter 2000) (stating that although intellectual property was once considered a dull subject, it is now one of the more fascinating areas of business and the law), available at <http://www.mitsloan.mit.edu/smr/past/2000/Bkshf412.htm> (last visited Oct. 3, 2001).

148. See Gerald Sobel, *The Court of Appeals for the Federal Circuit: A Fifth Anniversary Look at Its Impact on Patent Law and Litigation*, 37 AM. U. L. REV. 1087, 1092 (1988) (discussing the judicial trend in affording stronger protections to developments in technology).

149. See Dennis S. Karjala, *Misappropriation as a Third Intellectual Property Paradigm*, 94 COLUM. L. REV. 2594, 2597 (1994) (expressing concern that providing patents greater protection will harm the development of more and better products).

intellectual property concerns has run in a rough boom-and-bust cycle.<sup>150</sup> In the first several decades of the twentieth century, innovation was prized above government intervention in the marketplace.<sup>151</sup> Beginning in the 1930s, doubts regarding the sacrosanct nature of market principles reversed this course, with progressive antitrust enforcement sometimes invalidating patents.<sup>152</sup> While jurisprudence since the 1950s has largely created separate spheres for antitrust and patent law, it is nevertheless clear that anticompetitive behavior is only rarely advanced as a basis for scrutinizing the granting of patents today.<sup>153</sup>

The current breadth given to intellectual property law is attributable in part to the appellate court that hears intellectual property cases, the Court of Appeals for the Federal Circuit.<sup>154</sup> Despite its noted penchant for intervention into fact-finding,<sup>155</sup> the Federal Circuit is an intermediate federal appellate court, and not a trial court.<sup>156</sup> It reviews patent cases taken on appeal from district courts, such as the Unocal patent case.<sup>157</sup>

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150. See generally E. Thomas Sullivan, *The Confluence of Antitrust and Intellectual Property at the New Century*, 1 MINN. INTELL. PROP. REV. 1, 5-9 (2000) (providing a general discussion of the history surrounding the changing approaches in both antitrust and intellectual property fields), available at [http://mipr.umn.edu/archive/frames/Sullivan2000\\_01\\_01.htm](http://mipr.umn.edu/archive/frames/Sullivan2000_01_01.htm) (last visited Oct. 3, 2001).

151. See Steven P. Reynolds, *Antitrust and Patent Licensing: Cycles of Enforcement and Current Policy*, 37 JURIMETRICS J. 129, 131-35 (1997) (detailing both important legislation and waves of enforcement during the first thirty years of the century relating to antitrust and patent law).

152. See Sullivan, *supra* note 150, at 8 (stating that from the 1930s to the 1950s, the government prevailed in most antitrust cases while patents were regularly declared invalid).

153. See generally Reynolds, *supra* note 151, at 131-46 (detailing both the historical and current policies the government has taken towards enforcing antitrust and patent law violations); Sullivan, *supra* note 150, at 5-9 (describing the historic cycles in antitrust and intellectual property jurisprudence); see also *Rembrandts in Multi-tech's Attic*, MINNESOTABUSINESS.COM, (Apr. 2000) (noting that while patent infringement cases are frequent they have remained at a constant rate for the last century and, when compared to other historic periods, the number of cases is relatively low), available at <http://www.minnesotabusiness.com/htm/nn20000822.084527.htm> (last visited Oct. 3, 2001).

154. See STEPHEN ELIAS & RICHARD STIM, *PATENT COPYRIGHT & TRADEMARK* 240 (4th ed. 2001) (noting that "this special federal court of appeals, often referred to as 'Kafka,' is responsible for hearing and deciding all appeals from patent infringement actions decided in the U.S. District Courts, as well as all appeals from decisions by the Board of Patent Appeals and Interferences (a branch of the PTO).").

155. See Kimberly A. Moore, *Judges, Juries, and Patent Cases—An Empirical Peek Inside the Black Box*, 99 MICH. L. REV. 365, 396-98 (2001) (providing a statistical analysis of the Federal Circuit's approach to fact finding and the notation that the Federal Circuit affirms both judge and jury fact findings at a rate of seventy-eight percent).

156. See 28 U.S.C. § 1295(a) (1994 & Supp. V 1999) (outlining the appellate jurisdiction granted to the Federal Circuit).

157. See *id.* (noting that in these cases, the Federal Circuit's jurisdiction is exclusive).

Some critics have observed that “[a]lmost since its inception, the Federal Circuit has been dogged with criticism for straying from the path carefully delineated for appellate tribunals.”<sup>158</sup> The Federal Circuit has become so interventionist that displeased litigants appeal hoping that the Federal Circuit will in essence retry their cases.<sup>159</sup> The emphasis of the Federal Circuit on granting larger numbers of patents in more diverse areas of art is a matter of record:

Congress set up a new appeals court to which all patent appeals were referred. It was a procedural reform, to clear up a mess of inconsistent decisions from different courts, but its effect was dramatic. Before the court was established, around one in three patent-holders won their cases. After it, around two in three did. Landmark court decisions have made new areas of technology patentable. A 1980 case opened up biotechnology and genes for patenting; a 1981 case allowed the patenting of software; and a 1998 case has spawned more business-method patents.<sup>160</sup>

In many corporate sectors, the patent has been transformed from a mere legal tactic into an important and viable element of aggressive business strategy.<sup>161</sup> After Microsoft paid IBM \$30 million for infringing on a patent,<sup>162</sup> Chief Executive Officer Bill Gates transmitted a memorandum to his employees exhorting them to patent whenever possible.<sup>163</sup>

When viewed in the context of strategic patenting,<sup>164</sup> and with an eye to the record of the Federal Circuit in accommodating this trend, the Unocal patent case begins to appear consistent with emerging trends in intellectual property jurisprudence. Essentially, Unocal did not seek to patent the underlying commodity—clean gasoline. Instead, it attempted to patent the “art” or knowledge reflected in the

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158. See William C. Rooklidge & Matthew F. Weil, *Judicial Hyperactivity: The Federal Circuit's Discomfort with its Appellate Role*, 15 BERKELEY TECH. L.J. 8, § 1 (Spring 2000), available at [http://www.law.berkeley.edu/journals/btlj/articles/15\\_2/rooklidge/rooklidge.html](http://www.law.berkeley.edu/journals/btlj/articles/15_2/rooklidge/rooklidge.html).

159. See *id.* § 6 (criticizing the Federal Circuit for usurping trial court functions and thus reducing certainty in the appellate outcome).

160. See *Patent Wars*, THE ECONOMIST, Apr. 6, 2000, at 75.

161. See *id.* (noting that business attitudes towards patents changed largely in the 1980s, when American chip makers began to use patents to combat Asian competition).

162. See *id.* (pointing out that this event helped spur the use of patents as an important business technique).

163. *Id.* See also Maas, *supra* note 147, at para. 17 (explaining that intellectual property is at the core of management's business savvy and is no longer limited to a tool used solely by attorneys).

164. See *Patent Wars*, THE ECONOMIST, Apr. 6, 2000, at 76 (describing strategic patenting as an essential tool for competition, through which a business can patent a process to make a product, even if the product is not yet technologically feasible).

establishment of certain parametric ranges of gasoline property.<sup>165</sup> In this way, the Unocal strategy is associated with better known trends in the high-technology sector.<sup>166</sup> As hardware has become commoditized, the strategic patents are those that focus on the underlying “process.”<sup>167</sup> Of course, the risk in the ever-expanding reach of strategic patenting is that it will lead to unanticipated consequences.<sup>168</sup> As Professor Aoki concluded, “[o]verall, U.S. intellectual property rights cover too much and are still expanding, generating an intellectual property smog.”<sup>169</sup>

#### IV. CONFLICTS IN PUBLIC POLICY PRESENTED BY THE UNOCAL PATENT CASE

##### A. *Environmental Policy*

Congress adopted the Clean Air Act “to protect and enhance the quality of the Nation’s air resources so as to promote the public health and welfare and the productive capacity of its population.”<sup>170</sup> As a package, it is undeniable that the Clean Air Act Amendments of 1990 have made significant contributions to environmental protection.<sup>171</sup> The RFG Program in particular has exceeded all expectations for control, as this author recently testified before the

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165. *See id.* (stating that patenting a process, or knowledge about a subject, has become so popular that even major financial-service companies, such as Merrill Lynch and Citigroup, own multiple patents).

166. *See id.* at 76 (explaining the fight to patent software and computer processes as an attempt to control, if not monopolize, new areas of technology).

167. *See id.* at 77 (describing how Dell Computers, realizing that the actual machines were the early focus of patents, opted instead to patent its build-to-order process as a means of better dominating its competition). Dell Computers now has around seventy-seven patents protecting different parts of the building and testing process. *Id.*

“At the time, these patents were regarded as a waste of effort,” says Henry Garrana, vice-president of intellectual property at Dell. “People were very focused on patenting the machines themselves. But the machines business became a commodity business. A lot of the technology in the machines lay in the microprocessors, and almost everybody has Intel microprocessors, and the same hard-drive suppliers.

*Id.*

168. *See id.* (citing two key objections to new business-method patents: (1) they are too broad and will keep competitors out of potential business and (2) the patent holders will increase consumer prices); *see also* Aoki, *supra* note 147, at 267-73 (describing the current controversies and dilemmas involving intellectual property, including computers, free speech, and exportation).

169. *See* Aoki, *supra* note 147, at 274.

170. *See* 42 U.S.C. § 7401(b)(1) (1994).

171. *See* Gregory Wetstone, *Congressional Efforts to Eradicate Environmental Laws*, 14 PACE ENVTL. L. REV. 123, 123-24 (1996) (stating that this legislation has led to, among other things, a reduction in air toxins by 1.6 billion pounds per year, with costs dramatically lower than originally anticipated).

## Senate Energy and National Resources Committee:

EPA has compiled data for the United States showing that Phase I RFG has surpassed the requirements of the Clean Air Act. An analysis of the Phase I RFG produced by refiners shows that the fuel reduces ozone-forming compounds, such as VOCs, by over 28 percent—that's 44 percent above the requirement of the law. Air toxics are reduced by approximately 30 percent—that's almost twice as much as required by law. Ambient air monitoring confirms that the RFG program is working. Testing shows that benzene levels have declined by 31 percent between 1994 and 1997.<sup>172</sup>

These percentage reductions in air emissions resulting from the RFG Program are by no means insignificant to human health. The EPA recently estimated that seventy-five million Americans are now breathing cleaner air as a result of the program.<sup>173</sup> The cleaner air results from a reduction of VOCs that inhibit ground-level ozone, or smog.<sup>174</sup> Smog causes:

known health effects, which include irritation and inflammation of lung tissue, shortness of breath, chest pain, coughing, congestion, nausea, throat irritation, and increased susceptibility to respiratory infections. Studies have shown an association between elevated levels of ozone and increases in hospital admissions for respiratory problems in several cities. Young children and those suffering from respiratory conditions such as asthma and emphysema are more vulnerable to the effects of ozone pollution, but healthy adults are also affected by exposure to ozone.<sup>175</sup>

While some see both advantages and disadvantages in implementation of the RFG Program, the consensus view seems to be that the program produces strong net benefits in protection of

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172. *To Consider National Energy Policy with Respect to Fuel Specifications and Infrastructure Constraints and their Impacts on Energy Supply and Price (Part II): Hearing Before the Senate Comm. on Energy and Nat. Resources*, 107th Cong. (2001) (statement of Scott H. Segal, Oxygenated Fuels Ass'n), available at [http://energy.senate.gov/hearings/107-1/full\\_committee/fuel\\_infrastructure2/segal.htm](http://energy.senate.gov/hearings/107-1/full_committee/fuel_infrastructure2/segal.htm) (last visited Oct. 3, 2001) [hereinafter *Segal statement*].

173. *See To Consider National Energy Policy with Respect to Fuel Specifications and Infrastructure Constraints and Their Impacts on Energy Supply and Price, (Part II): Hearing Before the Senate Comm. on Energy and Nat. Resources*, 107th Cong. 61 (2001) (statement of Linda Fisher, Deputy Administrator, U.S. Environmental Protection Agency) [hereinafter *Fisher statement*] (stating that since its inception the RFG program has resulted in substantial annual reductions of VOC, NOx, and toxic air pollutants).

174. *See* Susan L. Mayer et al., *Implementation of the Reformulated Gasoline Program*, CONG. RESEARCH SERV. REP. FOR CONG. 95-850 (1995) (asserting that the goal of the RFG Program is to reduce VOC emissions, thereby combating potential adverse health effects), available at [http://www.cnie.org/NLE/CRSreports/Air\\_12.cfm](http://www.cnie.org/NLE/CRSreports/Air_12.cfm).

175. *See id.* (discussing the health benefits of RFG, including the reduction of harmful ground level ozone); *see also* John Blodgett, *Health Benefits of Air Pollution Control: A Discussion*, CONG. RESEARCH SERV. REP. FOR CONG. 89-161 (1989).

human health and the environment.<sup>176</sup> However, there has been some controversy associated with the use of the fuel additive methyl tertiary butyl ether (MTBE).<sup>177</sup> Yet, on balance, use of MTBE appears to have provided a reasonably-priced<sup>178</sup> and effective<sup>179</sup> air pollution control measure in its own right.

How then does upholding the Unocal patents undermine the RFG Program itself? It does so by fundamentally altering the cost structure of the program.<sup>180</sup> There can be little doubt that the demands for royalties made by Unocal alter the cost structure of

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176. See Mayer et al., *supra* note 174, at 9 (implying that the health benefits of reducing ground level ozone will outweigh any potential adverse health effects from the RFG Program); H.R. REP. NO. 104-201, at 57 (1995) (stating “[t]here are no published studies . . . which can find any definite link between the use of RFG and these reported illnesses. Because of this lack of hard, scientific evidence, the Committee is reluctant to impose any specific legislative restrictions on the use of RFG.”).

177. See Fisher statement, *supra* note 173 (suggesting studies and surveys indicate a strong relationship between MTBE use as a fuel additive in an area and MTBE contamination of drinking water). But see Press Release, Health Effects Inst., *New HEI Studies Confirm Blue Ribbon Panel Findings on Health Effects of Oxygenates in Gasoline* (June 15, 2001) (setting forth new studies that reiterate findings of MTBE’s low level of toxicity and consequently suggesting that adding MTBE to gasoline will pose little risk to health), available at <http://www.healtheffects.org/oxypress.htm>; OFFICE OF RESEARCH AND DEV., U.S. ENVTL. PROT. AGENCY, *Health Risk Perspectives of Fuel Oxygenates*, 600/R-94/217, at 9-10 (Dec. 1994) (stating that “there is no basis to expect that the use of [MTBE in gasoline] will pose a greater public health risk than traditional gasoline”), available at <http://www.epa.gov/ncea/oxygenates/risk-oxy.htm>.

178. By maintaining supply, MTBE moderates fuel prices. See Segal statement, *supra* note 172 (quoting petroleum economist Phil Verleger: “[R]emoval of MTBE from the California market could push the retail price of gasoline to levels previously unseen across the United States. Research on price elasticity of gasoline—confirmed in over 300 studies—means that high prices in California will pull gasoline from the rest of the country, leaving everyone short of supply.”); see also *To Consider National Energy Policy with Respect to Fuel Specifications and Infrastructure Constraints and Their Impacts on Energy Supply and Price, (Part II)*, Hearing Before the Senate Comm. on Energy and Nat. Resources, 107th Cong. (2001) (statement of Robert Card, Under Secretary, U.S. Department of Energy), available at [http://www.senate.gov/hearings/107-1/full\\_committee/fuel\\_infrastructure2/card.html](http://www.senate.gov/hearings/107-1/full_committee/fuel_infrastructure2/card.html). Card noted that:

MTBE’s contribution to gasoline supplies nationally is equivalent to about 400,000 barrels a day of gasoline production capacity or the gasoline output of four to five large refineries. Additionally, a loss of ability to use MTBE may also affect the ability of the U.S. gasoline market to draw gasoline supplies from Europe, the major source of our price-sensitive gasoline imports, since those refiners widely use MTBE, albeit typically at lower concentrations than in the U.S.

*Id.*

179. *The Environmental Benefits and Impacts of Ethanol Under the Clean Air Act: Hearing Before the Subcomm. on Clean Air, Wetlands, Private Property, and Nuclear Safety of the Senate Comm. on Env. and Pub. Works*, 106th Cong. (2000) (statement of Sen. Robert F. Bennett) (stating that “MTBE has served well as an additive producing substantial air quality benefits while extending gasoline supplies at a reasonable cost. In this time of escalating fuel prices, MTBE has played in part in maintaining adequate supply.”), available at [http://www.senate.gov/~epw/ben\\_0614.htm](http://www.senate.gov/~epw/ben_0614.htm).

180. See Keese statement, *infra* note 182 and accompanying text.

RFG.<sup>181</sup> If the cost structure of RFG yields an unacceptably high price at the pump, the fabric of political support for the program will inevitably fray. As one clean air expert has observed:

A number of control requirements mandated by the 1990 CAAA [Clean Air Act Amendments] have not yet started to bite. When they do start to bite, there will be a whole new community of people brought into the debate. Members of this community will not be acquainted with, or interested in, the overall policy goals of the CAAA, only its immediate effect on them. They will only know that pain is being inflicted and they will want it to go away. Because of this, you will see legislation introduced removing many of the those requirements of the CAAA.<sup>182</sup>

Moreover, some states participate in the RFG Program because they chose to opt in.<sup>183</sup> Despite significant initial enthusiasm for participation in the RFG Program as one way to demonstrate progress toward attaining air goals,<sup>184</sup> it is clear that an alteration of the cost-effectiveness of the program could prompt agitation for opting out in some cases.<sup>185</sup> It must be expected that as the relative costs of mobile source controls increase, such voluntary state participants may once

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181. For a complete discussion of the impact of the Unocal patents on the RFG cost structure, see *infra* note 182 and accompanying text.

182. See Ernest S. Rosenberg, *Clean Air Act Reform: A Necessity for the Act's Survival*, 14 PACE ENVTL. L. REV. 115 (1996). Rosenberg's words are prophetic regarding the RFG program and its oxygenate standard, for as RFG prices increased, Congress began to debate repeal of the oxygenate standard. See, e.g., *To Consider National Energy Policy with Respect to Fuel Specifications and Infrastructure Constraints and Their Impacts on Energy Supply and Price, (Part II): Hearing Before the Senate Comm. on Energy and Nat. Resources*, 107th Cong. (2001) (statement of William J. Keese, Chairman, Cal. Energy Comm.) (arguing that failing to waive "the Federal oxygenate requirement" results in "sacrificing consumers").

183. See 42 U.S.C. § 7545(k)(6) (1994); see also *Fisher statement, supra* note 173 (mentioning that "[a]lthough not required to participate, some areas in the Northeast, in Kentucky, Texas and Missouri have elected to join, or 'opt-in,' to the RFG program as a relatively cost-effective measure to help combat their air pollution problems. Today, roughly thirty-five percent of this country's gasoline consumption is cleaner-burning reformulated gasoline."); see also Mayer et al., *supra* note 174, at 13 (noting that "[a]lthough RFG is only mandatory in nine cities, the CAA allows other nonattainment areas to opt in to the RFG program. Initially, fourteen states, and the District of Columbia agreed to voluntarily require RFG as a means of achieving VOC emission reductions.").

184. See State and Terr. Air Pollution Program Administrators & Ass'n of Local Air Pollution Control Officials, Meeting the 15% Rate-of-Progress Requirement Under the Clean Air Act: A Menu of Options (Sept. 1993) (describing necessity for "a menu of options to assist state and local air pollution control agencies with jurisdiction over a 'moderate' or above ozone nonattainment area in developing their 15-percent volatile organic compound reduction plans. Such plans are required under Title I of the Clean Air Act Amendments of 1990").

185. See Mayer et al., *supra* note 174, at 14 (discussing state inquiries about the possibility of opting out of the RFG Program after state pollution control programs reach an effective level, thereby avoiding possibly prohibitive costs).

again shift to an emphasis on stationary source controls.<sup>186</sup> Doing so would leave the greater portion of air quality needs unaddressed.<sup>187</sup>

Last, even if the RFG program suffers no official retrenchment based on legislative revisiting or opt-outs, price increases may well force some manufacturers out of the RFG market.<sup>188</sup> Simply put, if the cost of the Unocal royalties becomes the marginal difference in comparative advantage between small blenders and refiners and their large, integrated competitors, such smaller competitors may simply leave the RFG market altogether.<sup>189</sup> In short, it is clear that the continued cost-effectiveness of the RFG Program is essential to the program's successful implementation. Unforeseen changes in circumstance can alter the careful balance of the Clean Air Act, undermining air pollution control across the country.<sup>190</sup>

### B. Consumer Policy

As discussed, changing the economic structure of the RFG Program directly conflicts with environmental policy as reflected in

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186. If mobile source controls become more difficult for states to endure, there is little choice but to exact more control from industrial stationary sources, given the continuing need for states to make progress towards attaining air goals. See Daniel P. Selmi, *Impacts of Air Quality Regulation on Economic Development*, 13 NAT. RESOURCES & THE ENV'T 382, 384 (1998) (noting that the difficulty and limited ability of states to regulate vehicle usage may result in increased mobile source emissions and the need for increased stationary source regulation).

187. See Off. of Mobile Sources, U.S. Env't Prot. Agency, *Automobile Emissions: An Overview*, FACT SHEET OMS-5 (Aug. 1994) (asserting that despite relatively low emissions from each individual car, personal automobiles are the number one polluters in numerous cities throughout the United States), available at <http://www.epa.gov/otaq/05-autos.htm> (last updated July 20, 1998).

188. See Alexei Barrionuevo, *Fears Over Gasoline Patents May Well Buttress Prices*, WALL ST. J., May 1, 2000, at A2.

189. See *id.* (suggesting that the threat of severe penalties and the inability to pay royalties is preventing small companies from making that kind of gasoline altogether). The George E. Warren Corp. of Vero Beach, Fla., and Northville Industries Corp. of Melville, N.Y., are among a growing list of so-called blenders that say they will not produce reformulated gasoline this summer because they are not sure they can avoid patent troubles and they cannot afford to pay royalties. "We won't be blending until we get an answer," said Jonathan Taylor, George E. Warren's chief financial officer. "We simply can't afford the liability." *Id.*

190. This "careful balance" within the Act is a political and a technical one. See Fisher statement, *supra* note 173 (stating that "[i]n the 1990 Amendments, Congress struck a balance between vehicle and fuel emission control programs after extensive deliberation. The RFG Program was designed to serve several goals. These include improving air quality and extending the gasoline supply through the use of oxygenates."); see also F. William Brownell, *Clean Air Act*, in ENVIRONMENTAL LAW HANDBOOK 120, 139 (Gov't Institutes, Inc. ed., 1993) (noting that "[w]hile Congress clearly envisioned the continued use of traditional emission control technology to achieve emission reductions required by the amendments, the success or failure of the new program for clean fuels will have a dramatic impact on future emission control programs throughout the country.").

the Clean Air Act.<sup>191</sup> These same cost factors bring the Unocal patents into conflict with consumer energy policy. When Congress established the Federal Energy Administration (FEA) in 1974, it explicitly found that “the general welfare and the common defense and security require positive and effective action” to ensure “the maintenance of fair and reasonable consumer prices” for energy.<sup>192</sup> As the FEA gave way to the establishment of the Department of Energy, Congress again reiterated the need “[t]o promote the interests of consumers through the provision of an adequate and reliable supply of energy at the lowest reasonable cost.”<sup>193</sup> On a separate track, federal antitrust policy also underscores the objective of protecting consumer welfare through maintaining adequate energy supply and reasonable prices. The director of the Federal Trade Commission’s Bureau of Competition explained this policy:

Consumer welfare is the goal of antitrust enforcement across all industries. Its importance is particularly clear in the energy industry, where even small price increases can strain the budgets of many consumers, particularly those with low and fixed incomes, and of small business, and, as a result, can have a direct and lasting impact on the entire economy. In fiscal years 1999 and 2000 to date, the Bureau of Competition spent almost one-third of its total enforcement budget on investigations in energy industries.<sup>194</sup>

In the summer of 2000, American consumers were treated to gasoline prices substantially higher than predicted by industry or government.<sup>195</sup> The factors that contributed to this gasoline price increase were many, including higher crude oil prices,<sup>196</sup> the use of

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191. See 42 U.S.C. § 7545(k)(1) (1994) (providing that emissions reductions are the primary goal of reformulated gasoline, acknowledging the corresponding objective of “taking into consideration the cost of achieving such emission reductions”).

192. See Federal Energy Administration Act of 1974, 15 U.S.C. §§ 2(a), 761(a) (characterizing the congressional intent of the Act as aimed at ensuring fair and efficient distribution of energy sources).

193. See Department of Energy Organization Act, 42 U.S.C. §§ 102(9), 7112(9) (discussing the main goals achieved by the establishment of the Department of Energy, specifically the promotion of consumer interests by maintaining a reliable and reasonably priced energy supply).

194. See *Solutions to Competitive Problems in the Oil Industry, (Part III): Hearings Before the House Comm. on the Judiciary*, 106th Cong. (2000) (statement of Richard G. Parker, Director, Bureau of Competition, FTC), available at <http://www.house.gov/judiciary/park0628.htm>.

195. See William Claiborne & Ceci Connolly, *Presidential Politics at the Pump: Soaring Midwest Gas Prices Fuel Candidates’ Rhetoric*, WASH. POST, June 22, 2000, at A1 (referencing substantial increases in gasoline prices, particularly related to reformulated gasoline markets in the Midwest).

196. See *id.* (citing different sources that attributed increased gas prices partially to higher crude oil prices).

ethanol in clean, reformulated gasoline,<sup>197</sup> pipeline problems,<sup>198</sup> and low inventories of crude oil, gasoline, and blendstocks.<sup>199</sup> However, another factor complicating the situation for gasoline consumers was the continuing controversy surrounding the Unocal patents. These patent claims impose direct costs on refiners allegedly operating under the teachings of the patent, and create indirect costs for refiners attempting to blend around the patents.<sup>200</sup> Worse yet, given the acknowledged dearth of RFG supplies in certain regions, the Unocal controversy created a chilling effect forcing some refiners to reconsider their continued participation in the RFG Program.<sup>201</sup> Taken together, legal uncertainties present in the case helped to perpetuate conditions under which the spot market for RFG was quick to yield high prices and slow to return them to more acceptable levels.<sup>202</sup>

While reasonable minds may legitimately disagree over the aggregate effect of the Unocal patent on the price of RFG, there can be no doubt that the atmosphere created by the controversial origin of the patent has undermined the stability of the RFG program. The Congressional Research Service wrote that,

[r]efiners using the Unocal process without a license operate in an area of uncertainty, because the cost of licensing the Unocal process has not yet been determined. Some contend that this uncertainty created by the court decision has impacted adversely RFG production.<sup>203</sup>

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197. *See id.* (listing several reasons for higher gas prices including federal environmental regulations).

198. *See id.* (indicating gas supply problems caused by ruptured pipelines contributed to increased gas prices).

199. *See* Kumins, *supra* note 69, at 1-2 (noting extremely low working inventories containing only about a two day consumption reserve).

200. *See id.* (highlighting the Unocal patent issues).

201. *See id.* (outlining alternative gasoline formulations).

202. *Unocal Offers Truce in Gasoline Patent Row*, REUTERS, Aug. 18, 2000 (stating that “[t]he patents are widely blamed for contributing to high gasoline pump prices in the U.S. this year, making it more difficult for refiners to meet new federally mandated clean burning fuel requirements used at roughly a third of the nation’s pumps.”), available at [www.reuters.com/news\\_company](http://www.reuters.com/news_company); *see also* Cathy Landry, *US EPA to Propose Credit Linked to Ethanol*, PLATT’S OILGRAM NEWS, June 29, 2000, at 1 (noting that “some industry sources have said fear of infringing on Unocal’s RFG patent has played a role in the surging Midwest RFG prices.”); Suzanne McElligott, *Unocal Collects on MTBE Patent*, CHEMICAL WK, July 5-12, 2000, at 26 (stating that the Unocal patent has produced a rise in gasoline prices due to million dollar suits against companies that infringed on its patent for reformulated gasoline); Alexei Barrionuevo, *Exhausting Feud: A Patent Fracas Pits Unocal Corp. Against Big U.S. Oil Producers*, WALL ST. J., Aug. 17, 2000, at A1 (hypothesizing that Unocal patent royalties “would probably be translated into higher prices at the gas pump”).

203. *See* Kumins, *supra* note 69, at 7.

### C. Regulatory Policy

Congress has long recognized the value of cooperative negotiations between industrial, public interest, and governmental actors.<sup>204</sup> The adoption of statutes like the Federal Advisory Committee Act (FACA)<sup>205</sup> had the purpose of preserving vital cooperative efforts without subverting the process to the special interest motivations of the participants.<sup>206</sup> The use of cooperative regulatory negotiation was a particularly critical element in the development and implementation of the federal RFG Program.<sup>207</sup> Such cooperation is essential to developing complex programs and ensuring that such programs are implemented with a minimum of subsequent interference from either the courts or Congress.<sup>208</sup>

The use of regulatory negotiation to achieve consensus has become an essential element in the implementation of the Clean Air Act.<sup>209</sup> The Reg-Neg process began as an informal one in the 1980s, springing from traditional uses in command-and-control regulations. In 1990, the process was formalized with the adoption of the Negotiated Rulemaking Act, involving protections such as Federal Register notice, retaining an independent convenor, and other protections pursuant to FACA.<sup>210</sup>

In order to make regulatory negotiation a success, a certain degree of forbearance from the exercise of legal rights was necessary and expected.<sup>211</sup> A large amount of forbearance was required in this case, as discussed above, because participation in the Auto/Oil group and discussions with the state of California required Unocal to forego its proprietary interest manifested in subsequent patent prosecution.<sup>212</sup>

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204. See Federal Advisory Committee Act, 5 U.S.C. app. 2, § 2(a) (1994) (finding that such cooperative negotiations “are frequently a useful and beneficial means of furnishing expert advice, ideas, and diverse opinions to the Federal Government”); see also *Cummock v. Gore*, 180 F.3d 282, 284 (D.C. Cir. 1999) (stating that committee members have both the right to obtain information pursuant to the Federal Advisory Committee Act and to fully participate in the deliberations of the Commission).

205. See Federal Advisory Committee Act, 5 U.S.C. app. 2, §§ 1-16 (1994).

206. See *Cummock*, 180 F.3d at 283; see also H.R. REP. NO. 92-1017, at 6 (1972), reprinted in 1972 U.S.C.C.A.N. 3491, 3496 (noting that a danger present in unregulated use of advisory committees is the possibility that special interest groups involved in such committees may exercise undue influence upon the government).

207. See *Segal statement*, *supra* note 172, at 1 (determining the only workable RFG Program was one acceptable to all interested parties).

208. See *id.* at 3 (referring to the “regulation negotiation process covering the reformulated gasoline program mandated by the Clean Air Act Amendments”).

209. See *id.* (explaining the regulation negotiation process led to an agreement in August 1991 that was signed by all the parties); see also 42 U.S.C. §§ 7401-7671 (1994).

210. See *Claiborne*, *supra* note 195, at 44-45.

211. See, e.g., *id.* at 45.

212. See *supra* Part II.

Far more is at stake in the current case than the cost-effectiveness of the federal RFG Program. Unocal participated in cooperative exercises with state and federal officials and fellow members of the industrial community. Thereafter, Unocal arguably manipulated its patents through amendments to capture the fruits of this joint labor.<sup>213</sup> It did so without the “full, clear, concise, and exact” statement required under applicable patent law.<sup>214</sup> If patent law allows Unocal to benefit monetarily from participation in cooperative negotiations, the whole fabric of regulatory negotiation and compromise may well fray.<sup>215</sup> This loss of cooperation undermines the regulatory process, and can diminish environmental protection if research efforts are thereby chilled.<sup>216</sup>

#### D. National Security

Although arguments premised on the link between energy price and supply and national security have fallen out of fashion of late, no one can doubt that the tragic events of September 11, 2001 once again have focused some attention on the importance of fully assessing the impact of energy issues on national security.<sup>217</sup> Indeed, motor fuel supply was called into question within hours of the terrorist attacks in New York and Washington.<sup>218</sup> While the initial

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213. See Barrionuevo, *supra* note 188, at A8 (describing Unocal's effort to manipulate regulatory negotiations to benefit from patent applications).

214. See 35 U.S.C. § 112 (recognizing the need for precise specification and exact terms to enable a person skilled in the art to make and use the same invention).

215. See Barrionuevo, *supra* note 189, at A1 (speculating that the Unocal patent case may discourage high-technology and other industrial companies from collaborating on environmental standards because rivals may worry that the competition will patent the result).

216. See H.R. REP. NO. 106-674, at 47 (2000) (reporting that environmental research is used “to provide the scientific knowledge and technologies necessary for preventing, regulating, and abating pollution, and to anticipate emerging environmental issues”).

217. See *infra* note 219.

218. See, e.g., Press Release, *Sudden Spikes in Gas Prices a Temporary Anomaly*, AAA-CMC, AM. AUTOMOBILE ASS'N & CHICAGO MOTOR CLUB (Sept. 12, 2001) (noting that “[i]mmmediate reaction to the attacks included the price of crude oil climbing above \$30 per barrel in overseas trading, the temporary shutdown of various pipeline and gasoline distribution complexes in the United States and the suspension of commodities trading on the New York futures market. In addition, there were numerous reports of surging gasoline prices in many areas of the Midwest.”), available at [http://biz.yahoo.com/prnews/010912/cgw014\\_1.html](http://biz.yahoo.com/prnews/010912/cgw014_1.html); see also James Ridgeway, *Economic Terrorism: Markets Fall as World Watches Cities Burn*, VILLAGE VOICE, Sept. 12, 2001 (citing Strategic Forecasting report stating that, “‘Oil traders are betting that the United States will seek retribution against a Middle Eastern target; that has pushed crude oil prices up to a nine-month high.’ By early evening, there were reports of panicked drivers queuing up for gasoline around the U.S., with prices hitting \$5 a gallon.”), available at [http://dailynews.yahoo.com/h/vvny/20010912/lo/28061\\_1.html](http://dailynews.yahoo.com/h/vvny/20010912/lo/28061_1.html).

gasoline price responses to the terrorist attacks were later seen to be without real foundation,<sup>219</sup> it is equally clear that a robust and healthy petroleum refining sector is intimately related to national security and the capacity for force mobilization.<sup>220</sup> The National Defense Council Foundation (NDCF) noted that five different Presidents—Eisenhower, Kennedy, Nixon, Ford and Carter—imposed restrictions on imports of refined petroleum products because they recognized that maintaining healthy domestic refining capacity was essential to national security.<sup>221</sup> To the extent that the Unocal patent undermines the health of the sector, its application is inconsistent with national security objectives.<sup>222</sup> In a very real way, endangering the federal RFG Program can also result in significant reductions supply as oxygenates exit the market.<sup>223</sup>

First, the amount of refined products required to supply a modern military far exceeds the amount required in the past. For example, during the peak of Operation Desert Storm, the half million U.S. military personnel involved consumed more than 450,000 barrels of light refined products per day, nearly four times the amount used in World War II by the two million strong Allied Expeditionary Force that liberated Europe.<sup>224</sup>

Second, the nature of modern warfare necessitates the use of high volumes of gasoline and other refined products. The shorter warning time requires massive air lifts of supplies overseas, and the increased emphasis on heavy bombing and maneuver warfare such as that used in the Gulf War create a significant demand for refined products.<sup>225</sup> Further, because these modern conflicts are likely to take place in underdeveloped regions and because of the short warning period, many of the refined products necessary for mobilization must originate from domestic sources.<sup>226</sup>

Finally, because domestic demand during full mobilization (two

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219. See, e.g., Press Release, *Gas Price Up Less Than One Cent Since Terror Attacks*, AAA REPORTS, Am. Automobile Ass'n (Sept. 13, 2001) (noting that both consumers and gasoline stations have reacted calmly and responsibly with respect to fuel pricing and consumption), available at [http://biz.yahoo.com/bw/010913/130213\\_1.html](http://biz.yahoo.com/bw/010913/130213_1.html).

220. See *id.* (explaining that even though the U.S. energy supply was not threatened by the terrorist attacks, the tie between national security and a strong energy sector remains).

221. National Defense Council Foundation, *The Growing Refining Gap, A Threat to National Security* vi (Apr. 29, 1994) [hereinafter *NDCF*] (on file with author).

222. See *id.*

223. See Verleger, *supra* note 121 (explaining that by maintaining supply, MTBE moderates fuel prices).

224. *NDCF*, *supra* note 221, at 2.

225. *Id.*

226. *Id.* at 6.

simultaneous regional conflicts) could increase by twenty-eight percent, the United States would necessarily experience an ever-increasing reliance on foreign sources of supply.<sup>227</sup> As domestic capacity decreases and the anticipated requirements for the military increase, justifying the status quo based on the belief that foreign countries will provide the necessary supply represents a dangerous alternative.<sup>228</sup> As NDCF noted, “there can be no doubt that with a deficit of refining capacity of the magnitude anticipated, the nation’s national security would clearly be threatened.”<sup>229</sup>

In order to assess the impact of these factors, the NDCF analyzed military needs in several scenarios and then compared those needs to our domestic refining capacity.<sup>230</sup> If a military conflict were to break out, the differential between domestic refining capacity and domestic consumption would obviously increase due to the needs of the military and the military industrial complex.<sup>231</sup> “Even if draconian conservation and rationing measures were employed during a conflict, and succeeded in achieving a reduction in civilian demand of as much as 20%, a severe shortage would still develop.”<sup>232</sup> A twenty percent demand reduction is far greater than any past decrease in demand experienced in the United States (three times greater than the Arab oil embargo and six times greater than the Iranian oil boycott).<sup>233</sup> The economic impact and the threat to our national security are both to be avoided if at all possible. As the U.S. Energy Association succinctly put it, “the decline in our domestic . . . refining capacity cannot conceivably be in our national interest.”<sup>234</sup>

## V. POTENTIAL SOLUTIONS

In a perfect world, competitors are supposed to use patents, in the words of Abraham Lincoln, to add “the fuel of interest to the fire of genius, in the discovery and production of new and useful things.”<sup>235</sup> Obviously, President Lincoln did not anticipate the use of strategic patenting, particularly when corporations participate in joint exercises in pursuit of an open regulatory proceeding. Of course, the typical dispute resolution mechanism for patents once issued is the

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227. *Id.* at 4.

228. *Id.*

229. *Id.*

230. NDCF, *supra* note 221, at 4.

231. *Id.* at 27.

232. *Id.*

233. *Id.* at 25.

234. United States Energy Association, *Energy '93 Report* 10 (May 1993).

235. ABRAHAM LINCOLN: SPEECHES AND WRITINGS 1859-1865 11 (D. Fehrenbacher ed., 1989).

courts of the United States.<sup>236</sup> Therefore, once the Federal Circuit ruled in the Unocal case, and the Supreme Court declined to grant a petition for review, the list of easy answers to the questions posed by the case diminished.

#### A. *Administrative Remedies*

The Solicitor General of the United States, in opposing the certiorari petition filed before the Supreme Court, described the Unocal case as presenting insufficiently novel legal arguments to justify review.<sup>237</sup> Nevertheless, the Solicitor General stated that, “[w]e share the petitioners’ and amici’s concern about a potential misuse of the regulatory process by a patent applicant.”<sup>238</sup>

Although arguing against Supreme Court review, the Solicitor General observed that government agencies like the Federal Trade Commission (FTC) “may impose non-patent remedies against parties who make affirmative misrepresentations to a public or private regulatory body involved in setting industry standards.”<sup>239</sup> The FTC has a long history of involvement in cases where intellectual property claims are used impermissibly to produce anti-competitive results.<sup>240</sup> In 1995, the FTC and the Department of Justice released new guidelines to be used “in pursuing antitrust charges against entities involved in questionable licensing of intellectual property rights.”<sup>241</sup>

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236. See *McCormick Harvesting Mach. Co. v. Aultman*, 169 U.S. 606, 609 (1897) (restating the rule that once a patent is issued by the U.S. Patent and Trademark Office, the only authority vested with the power to set aside or annul that patent is the judiciary, via a proper proceeding in the courts of the United States); see also *United States v. Am. Bell Tel. Co.*, 128 U.S. 315, 364 (1888) (explaining that although the power to vacate or set aside a patent was not expressly given to the courts of the United States, Congress intended the courts to exercise that power).

237. See Brief for the United States as Amicus Curiae at 8, *Atl. Richfield Co. v. Union Oil Co. of Cal.*, 208 F.2d 989, 54 U.S.P.Q.2d (BNA) 1227 (Fed. Cir. 2000) (No. 00-249) (arguing that the Court’s review is not appropriate for narrow issues regarding particular patents).

238. *Id.* at 9.

239. *Id.* at 19 (citing with approval *In re Dell Computer Corp.*, 121 F.T.C. 616 (1996), in which the FTC sanctioned Dell Computer Corp. for misrepresenting information about its intellectual property to a non-profit organization).

240. See, e.g., *In re Intel Corp.*, No. 9288, 1998 WL 297178, paras. 38-42 (F.T.C. June 8, 1998) (deciding that Intel violated antitrust law when it denied companies access to products and information unless they licensed their patented products to Intel). See generally Commissioner Sheila F. Anthony, *Antitrust and Intellectual Property Law: From Adversaries to Partners*, 28 AIPLA Q.J. 1 (2000) (discussing the historical relationship between antitrust and intellectual property law and the FTC’s involvement in matters related to intellectual property).

241. See U.S. DEP’T OF JUSTICE & FED. TRADE COMM’N, ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY (Apr. 6, 1995) (issuing guidelines for the enforcement of antitrust policy for licensing of intellectual property protected by patent, copyright, trade secret law and know-how); see also Sullivan, *supra* note 150, at 22-28 (discussing the new guidelines).

These guidelines were an attempt to provide greater certainty and predictability to the intervention of government agencies.<sup>242</sup>

In March 2001, the petitioning Refiners in the Unocal case decided to take the Solicitor General's advice, and they filed a petition before the FTC.<sup>243</sup> The FTC investigation examines whether the Unocal patents on production processes for cleaner burning gasoline violate fair competition laws.<sup>244</sup> The petition apparently alleges that Unocal used information gained pursuant to its participation in a regulatory negotiation in order to obtain patents, and did so in contravention of its public agreement not to do so.<sup>245</sup> The FTC has described the range of its potential remedies as follows, although there has been no specific time limit offered for consideration of the petition:

Should the F.T.C. find evidence of anti-competitive practices, it has several options . . . The commission could simply close the case and reserve the right to take action later. It could forge a consent agreement with Unocal in which the company might drop its demands for royalty payments without admitting wrongdoing. If an agreement cannot be reached, the commission could file suit against Unocal in federal court or in its own administrative law court. It could also ask the Justice Department to file suit seeking damages against Unocal.<sup>246</sup>

While the FTC certainly has a range of potential responses, no result is guaranteed by operation of law, nor is Unocal bereft of defenses. For example, if Unocal contends that the regulatory negotiation in which it participated was part of its extended right to communicate with the government regarding matters of public policy, Unocal might advance a broad theory of protection for its actions under the so-called Noerr-Pennington doctrine.<sup>247</sup> While the

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242. See Sullivan, *supra* note 150, at 22 (explaining that the guidelines help predict what behavior will lead to an antitrust challenge); see also Azam H. Aziz, *Defining Technology and Innovation Markets: The DOJ's Antitrust Guidelines for the Licensing of Intellectual Property*, 24 HOFSTRA L. REV. 475, 477 (1995) (explaining that the DOJ's issuance of guidelines is an attempt to clarify the situations in which it would challenge a proposed licensing agreement).

243. See Neela Banerjee, *F.T.C. Begins Inquiry Into Unocal's Patents*, N.Y. TIMES, Aug. 15, 2001, at C4 (reporting that ExxonMobil filed a petition with the FTC, against Unocal, after it lost at previous attempts to invalidate the patent).

244. See *id.* (describing the background, causes and possible consequences of the FTC investigation).

245. See *id.* (explaining the history of the Unocal dispute).

246. *Id.*

247. See *United Mine Workers of Am. v. Pennington*, 381 U.S. 657 (1965) (holding that joint efforts to influence public officials do not violate antitrust laws even though intended to eliminate competition); *E. R.R. Presidents Conference v. Noerr Motor Freight*, 365 U.S. 127, 145 (1961) (holding that the railroad's use of a publicity campaign to influence the legislature to take action on a specific law does not violate the Sherman Act).

Noerr-Pennington doctrine does protect legitimate petitioning of the government as a form of speech largely excepted from antitrust analysis,<sup>248</sup> it has been clear since the inception of the doctrine that it cannot be used as a “mere sham to cover what is actually an attempt to interfere directly with the business relationships of a competitor.”<sup>249</sup>

The question of whether the FTC, or a potential reviewing court, will believe that Unocal’s actions are protected is essentially a factual one. If it can be established that Unocal affirmatively misrepresented its intentions regarding compliance with the cooperative research agreement, or that it misrepresented its understanding of cost analysis by failing to disclose its strategic patenting, such misrepresentations could be material to any Noerr-Pennington analysis.<sup>250</sup> As the D.C. Circuit has stated, “[h]owever broad the First Amendment right to petition may be, it cannot be stretched to cover petitions based on known falsehoods.”<sup>251</sup> Of course, the degree of corruption necessary to overrule protection exists on a spectrum.<sup>252</sup> The more corrupt the conduct, the less likely that it will be protected.<sup>253</sup> In particular, if the purpose of deception is to fool an administrative agency into a certain regulatory course, it is easy to understand the reluctance of the government to allow an antitrust exemption to be a ‘get-out-of-jail-free card.’<sup>254</sup>

### B. Legislative Options

The story of the Unocal patents has not escaped the attention of Congress, particularly in light of the case’s often-reported relationship to high gasoline prices.<sup>255</sup> In both the 106th<sup>256</sup> and the

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248. See *Eastern R.R. Presidents Conference*, 365 U.S. at 139-40 (holding that if the Sherman Act was interpreted to disqualify people from taking a public position on an issue from which they could receive a public benefit, it would deprive the people of rights inherent in democracy); see also 16A AM. JUR. 2D CONSTITUTIONAL LAW § 533 (1998) (explaining that according to the Noerr-Pennington doctrine, the right to petition the government is protected by the First Amendment, even when the purpose is to destroy competition).

249. See *E. R.R. Presidents Conference*, 365 U.S. at 144.

250. See *id.* at 145 (determining that a publicity campaign did not violate fair competition laws).

251. See *Whelan v. Abel*, 48 F.3d 1247, 1255 (D.C. Cir. 1995) (explaining that there is a limit to the protection afforded by First Amendment claims).

252. *Id.*

253. See, e.g., *Fed. Prescription Serv., Inc. v. Am. Pharm. Ass’n*, 663 F.2d 253, 263 (D.C. Cir. 1981) (holding that the Noerr doctrine does not protect attempts to influence the government through corruption and misrepresentation).

254. See *Israel v. Baxter Labs., Inc.*, 466 F.2d 272, 278 (D.C. Cir. 1972) (stating that actions meant to inhibit the fair functioning of administrative agencies are not protected by the antitrust exemption).

255. See Alexei Barrionuevo, *Regulators Examine Process Unocal Used to Gain Fuel*

107th<sup>257</sup> Congresses, legislation was introduced to address the Unocal patents. The language of these bills, according to the Congressional Research Service, purports to “[a]mend the Clean Air Act to authorize licensing of patents in cases where a right to a patent is necessary to comply with provisions regarding the regulation of fuels.”<sup>258</sup> The Clean Air Act already has a provision requiring the mandatory licensing of patents needed for compliance with certain technological standards.<sup>259</sup> However, the legislation in question, introduced by Representative Dennis Kucinich (D-OH), among others, would add the RFG Program<sup>260</sup> to the list of provisions to which mandatory licensing already applies at Section 308.<sup>261</sup> As Representative Kucinich describes his approach:

[The Unocal] patent restricts the production of gasoline, thus reducing the supply and increasing prices. The Clean Air Act, passed in 1970, gives the Attorney General the power to order the licensing of such fuels at fair and reasonable prices to all manufacturers; however, RFG did not exist at the time and was not included in the Act, thus prohibiting the Attorney General from giving such an order. The Gas Price Spike Act [H.R. 1967] would modify the Clean Air Act by incorporating RFG, and permitting

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*Patent*, WALL ST. J., Aug. 15, 2001, at A4 (reporting that the FTC has recognized the patents as a secondary factor in the high gas prices of 2000); *Unocal's Patent Claim Likely to Drive Gas Prices Even Higher*, J. REC., June 5, 2000 (reporting that if it licenses the patent for reformulated gasoline, Unocal could receive up to \$127 million in royalties, which will drive up the cost of gasoline by one to six cents per gallon), available at 2000 WL 14295870; *ExxonMobil CEO Says Unocal Patents May Raise Gas Prices*, WALL ST. J., June 1, 2000 [hereinafter *ExxonMobil statement*] (discussing comments made by the CEO of ExxonMobil that the price of gasoline could rise because the Unocal patent forces other refiners to expend time and money to find methods of meeting new environmental standards while avoiding patent infringement), available at 2000 WL-WSJ 3031456 ; see also *infra* text accompanying notes 256-257.

256. See Lower Gasoline Prices through Technology Access Act of 2000, H.R. 4739, 106th Cong. (2000) (providing mandatory licensing of patents on reformulated gasoline).

257. See Gas Price Spike Act of 2001, H.R. 1967, 107th Cong. (2001) (amending the Internal Revenue Code to impose an excise tax on the sale of crude oil and natural gas equal to the percentage of the windfall profit on the sale).

258. See H.R. 4739, 106th Cong. (2000), available at <http://thomas.loc.gov/bss/dl06query.html>.

259. See 42 U.S.C. § 7608 (1994) (giving the Attorney General authority, upon application, to require licensing of patents that relate to requirements for stationary sources and engine emissions that are used for commercial purposes and result in a lessening of competition or a tendency to create a monopoly).

260. See 42 U.S.C. § 7545(k) (1994) (requiring the Administrator to establish regulations for reformulated gasoline that would require the greatest reduction in emissions).

261. See 42 U.S.C. § 7608 (1994) (applying the mandatory licensing requirement to patents related to emissions standards for stationary sources and motor vehicle engines).

such action.<sup>262</sup>

The targeted approach reflected above has much to recommend it because it focuses attention narrowly on the issue of patents that may interfere with an environmental regulatory scheme. However, it should be clear that all the relief available under this legislative approach is limited to mandatory licensing at fair and reasonable rates.<sup>263</sup> There has never been a concern that Unocal would avoid licensing its intellectual property; it is only too happy to do so.<sup>264</sup> However, the definition of fair and reasonable is still capable of producing major perturbations in the marketplace for gasoline.<sup>265</sup>

There are, of course, more substantial legislative approaches that are worthy of some consideration. For example, a medical activity exemption exists within the patent law to shield doctors from patent-liability when undertaking procedures that may, in part, be reliant on patented intellectual property.<sup>266</sup> In the same way, refiners of RFG are performing a social purpose in cleaning the air for protection of the health of Americans in our most polluted cities. Thus, refiners of RFG could be eligible for similar exemptions. As one intellectual property attorney described the medical exemption: "The exemption exists because we as a society have decided that we want to promote treatment of sick people, and we want to give medical doctors an opportunity to heal people if that opportunity is available."<sup>267</sup> In the same way, refiners participating in production of RFG seek to heal communities by reducing air pollution.

### C. Longer Term Options

Of course, viewing the Unocal patents through the lens of the

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262. See Dennis Kucinich, Solving the Gasoline Crisis Animated Presentation (outlining Congressman Kucinich's proposals introduced in the Gas Price Spike Act of 2000), available at <http://www.house.gov/kucinich/flash1.htm> (last visited Oct. 6, 2001).

263. See *id.* (recommending that the RFG Program be subject to mandatory licensing requirements that exist for patents related to other environmental standards).

264. See *ExxonMobil statement, supra* note 255, at \*1 (stating that Unocal is seeking to negotiate licenses for its reformulated fuel patent).

265. See Neela Banerjee, *F.T.C. Begins Inquiry Into Unocal's Patents*, N.Y. TIMES, Aug. 15, 2001, at C4 (stating that refineries are forced to "spend more regardless of whether they blend around the patents or pay Unocal royalties on them," and noting the high percent of refiners' margins that are swallowed by patent royalties).

266. See 35 U.S.C. § 287(c)(1) (1994 & Supp. II 1996) (providing that the sections of the Patent Code defining infringement do not apply to a medical practitioner's use of a patented procedure).

267. Symposium, *Patent Rights and Licensing*, 6 B.U. J. SCI. & TECH. L. 3, para. 27 (2000) (statement of Thomas Meyers, Esq.) (discussing the medical practitioner's exemption in the Patent Code).

special, protective role of environmental policy is not the only option open for appropriate legislative reform. As discussed above, in periods of national distress, there is an undeniable link between the robustness of the refining sector and the national security of the United States.<sup>268</sup> Most of the national security controls placed on patents arise when the PTO is considering the patent application.<sup>269</sup> If publication of a patent might be detrimental to national security, the Commissioner of Patents may order a special review, which can result in a secrecy order.<sup>270</sup>

There are certain remedies available if the effect of a patent's license has an adverse impact on national security. For example, the Royalty Adjustment Act<sup>271</sup> authorizes government agencies to adjust unilaterally royalty payments to a licensor on articles supplied by a licensee during times of war, on the grounds of national security.<sup>272</sup> While no one is suggesting that current circumstances constitute an act of war in anything other than a metaphorical sense,<sup>273</sup> it is also clear that national security exceptions to current patent law do not end with mere secrecy reviews.<sup>274</sup> With greater congressional attention paid to a range of national security improvements,<sup>275</sup> it is reasonable to cast a glance at security constraints on intellectual property protection.

In both the cases of environmental or national security

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268. See *supra* Part IV.D and accompanying notes.

269. See 35 U.S.C. § 181 (1994) (providing a special procedure for patents that affect national security).

270. See *id.* (explaining the procedure for keeping inventions secret and withholding patents that, if published, could affect national security interests); see also 35 U.S.C. § 183 (1994) (providing that if a secrecy order is issued, the inventor is entitled to compensation). See generally PATENT AND TRADEMARK OFFICE, U.S. DEP'T OF COMMERCE, MANUAL OF PATENT EXAMINING PROCEDURE § 100 (7th ed. 1998 & Rev. 2000) (discussing the PTO's secrecy order review process).

271. See Royalty Adjustment Act of 1942, Pub. L. No. 77-768, 56 Stat. 1013.

272. See *id.* (granting government agencies such authority when royalty payments are deemed unreasonable and excessive); see also *Coffman v. Fed. Labs. Inc.*, 171 F.2d 94, 102 (3d Cir. 1948) (discussing the constitutionality of the Royalty Adjustment Act).

273. See *President Bush's Remarks*, WASH. POST, Sept. 12, 2001, at A2 (declaring a "war on terrorism" after two hijacked passenger jets struck the twin 110-story towers of New York's World Trade Center, a third slammed into the Pentagon near Washington and a fourth crashed in Pennsylvania).

274. See, e.g., *supra* notes 271-272. The use of patented information in creating potential breaches of national security can be quite significant. See Glenn Zorpette, *Patent Blunder*, SCI. AM., Nov. 1998 ("the heart of Iraq's recipe for VX [a chemical weapon] may very well have come from the U.S. Patent and Trademark Office. Iraq's affinity for U.S. patents and other open technical literature was established in 1991, shortly after the war in the Persian Gulf."), available at <http://www.sciam.com/1998/1198issue/1198techbus1.html>.

275. See, e.g., Adam Clymer, *Democrats' Wish Lists Relegated to Back Burner*, N.Y. TIMES, Sept. 30, 2001, at A21 (stating that most of the current legislative agenda is now targeted at security issues related to recent terrorist actions).

amendments to the patent law, the government must face the issue of compensation for the lost value of the patent, largely because patents are specie of property protected by the Fifth Amendment.<sup>276</sup> The Supreme Court has determined that governmental infringement on intellectual property can effect a Fifth Amendment “taking.”<sup>277</sup> Though any delimitation of patent rights can be so criticized, the case for takings is not open and shut. For example, the Supreme Court has “generally been unable to develop any ‘set formula’ for determining . . . what constitutes a taking.”<sup>278</sup> Indeed, among the factors that must be considered in evaluating the takings claim of intellectual property is the degree of “interference with reasonable investment-backed expectations.”<sup>279</sup> If reasonable expectations, in the case of the RFG, can be defined by the four corners of the regulatory negotiation process, it is not clear that royalty payments for the Unocal patents come within the scope of a taking.<sup>280</sup> In any event, like the applicability of the Noerr-Pennington doctrine, takings cases turn on facts.<sup>281</sup> Further, both environmental protection and national security provide rationales for applying the government’s inherent police power.<sup>282</sup> Even the most intrepid defender of property rights must concede that police power can be a daunting barrier to recovery of compensation for an alleged taking.<sup>283</sup>

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276. See U.S. CONST. amend. V (“[N]o property shall be taken without just compensation.”).

277. See, e.g., *Ruckelshaus v. Monsanto Corp.*, 467 U.S. 986, 1003-04 (1984) (finding that regulatory taking of trade secrets could occur under certain conditions); *Hollister v. Benedict & Burnham*, 113 U.S. 59 (1885) (citing *James v. Campbell*, 104 U.S. 356 (1881), in which the Court found that patents, like other property, are protected from the government through the U.S. Constitution’s prohibition on taking private property without just compensation).

278. See *Ruckelshaus*, 467 U.S. at 1005 (explaining that although the Court has not developed a rule for determining a taking, it has identified factors to be used in assessing whether a government action is a regulation or a taking).

279. See *id.* (explaining the factors involved in determining a taking, which include “the character of the governmental action, its economic impact and its interference with reasonable investment-backed expectations”).

280. This is simply because Unocal could never have relied on the Reg-Neg to create exclusive rights to a patent. The Reg-Neg was designed to facilitate jointly created and agreed upon standards and regulations.

281. See *Ruckelshaus*, 467 U.S. at 1005 (stating that determining whether a taking exists is a factual question).

282. See *id.* at 1008 (citing *Corn Prods. Refi. Co. v. Eddy*, 349 U.S. 427, 431-32 (1919) and stating that the right of the manufacturer is subordinate to the right of the government to exercise its police power).

283. See *Protecting Private Property Rights from Regulatory Takings: Hearing Before the Subcomm. on the Constitution of the House Comm. on the Judiciary*, 104th Cong. 46 (1995) (statement of Roger Pilon, Senior Fellow and Director, Center for Constitutional Studies, Cato Institute) (explaining that owners are left with no protection, as regulations that are justified by serving the public good have legitimated the police power and diluted the effect of the compensation requirement).

Looking to the future, the Unocal patents case may expose an even more fundamental flaw in the legal framework for granting patents in the United States. While the number of patents granted in both the United States and Europe has increased recently, the trend has been less marked in Europe.<sup>284</sup> There has been some commentary urging the United States to adopt a model for granting patents similar to that in effect in Europe, where after a patent has been issued, competitors have a statutory right to oppose the patent before the agency that grants the patent.<sup>285</sup> Patents are often overturned, and at least one commentator believes that such a system “helps weed out bad patents.”<sup>286</sup> While a comprehensive comparison of the two systems is beyond the scope of this article, more systemic reforms may be useful in addressing cases like the Unocal patents.

#### CONCLUSION

The Patent Clause of the U.S. Constitution “does not allow the granting of these valuable franchises to private individuals, with its consequent public detriment, unless there is a concomitant public benefit.”<sup>287</sup> The context of regulatory development in which the Unocal patents were filed and amended presents important public detriments, without corresponding benefits, which is reflected in both consumer and environmental policy. While the courts’ commitment to public benefit is laudable in the abstract, it may not be realistic to expect a thorough analysis of benefit in light of the emerging permissive jurisprudence of the Federal Circuit regarding patentability. Therefore, it must fall to other institutions, such as the Federal Trade Commission or the Congress, to address competing public policy interests in a measured and balanced way.

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284. See *Patent Wars*, *supra* note 160, at 75 (explaining that the number of patents issued in the United States is twice that of ten years ago, but that in Europe, the growth has been slower).

285. See *id.* (stating that patents are issued in Europe at a slower pace because the law requires patent offices to seek out opposition).

286. *Id.* at 78.

287. See *Beckman Instruments, Inc. v. Chemtronics, Inc.*, 439 F.2d 1369, 1371 (5th Cir. 1970).