

## Volkswagen's Little Engine That Could... Deceive The EPA

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### I. Introduction

The Clean Air Act (CAA) regulates air emissions from stationary and mobile sources to protect public health and control air pollution.<sup>1</sup> The Act promulgates the Environmental Protection Agency (EPA) to set standards for the automobile industry, specifying emissions maximums for automobiles manufactured in or imported into the United States.<sup>2</sup> The EPA administers the CAA, and the courts will defer to the EPA's judgment in setting and monitoring these standards, so long as the EPA does not act in a way that is "arbitrary or capricious."<sup>3</sup> Therefore, the EPA has power to monitor and adjudicate violations of the CAA.<sup>4</sup> Under Title II of the Act, the EPA sets emissions standards for all mobile sources, including automobiles produced by Volkswagen.<sup>5</sup>

Volkswagen (VW) egregiously violated mobile source emission requirements by installing illegal "defeat devices" in their diesel vehicles manufactured between 2009 and 2015.<sup>6</sup> A defeat device uses a computer algorithm that monitors and alters data when the vehicle performs under laboratory conditions.<sup>7</sup> Under laboratory tests, defeat devices augmented data to conform to mobile emissions standards. In contrast, on the road, vehicles grossly exceed

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<sup>1</sup> Clean Air Act of 1970, 42 U.S.C. § 201 (2004).

<sup>2</sup> Clean Air Act of 1970, 42 U.S.C. § 201 (2004).

<sup>3</sup> *Chevron U.S.A. Inc. v. Natural Resources Defense Council Inc.*, 467 U.S. 837, 844(1984).

<sup>4</sup> *Chevron U.S.A. Inc. v. Natural Resources Defense Council Inc.*, 467 U.S. 837, 844 (1984).

<sup>5</sup> Clean Air Act of 1970, 42 U.S.C. § 201 (2004).

<sup>6</sup> Jack Ewing, *Volkswagen Says 11 Million Cars Worldwide Are Affected in Diesel Deception*, NEW YORK TIMES, (September 22, 2015) [http://www.nytimes.com/2015/09/23/business/international/volkswagen-diesel-car-scandal.html?\\_r=0](http://www.nytimes.com/2015/09/23/business/international/volkswagen-diesel-car-scandal.html?_r=0) (last visited Sept. 22, 2015); Notice of Violation, ENVIRONMENTAL PROTECTION AGENCY (18 Sept. 2015) available at <http://www.epa.gov/vw>.

<sup>7</sup> Drew Kodjak, *EPA's Notice of Violation to Volkswagen*, INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION, <http://www.theicct.org/news/epas-notice-violation-clean-air-act-volkswagen-press-statement> (Oct. 22, 2015).

maximum emissions.<sup>8</sup> Some estimate that defeat devices allowed VW vehicles to emit up to thirty-five times the legal limit of nitrogen oxides set by the EPA.<sup>9</sup> VW installed devices in an estimated eleven million vehicles worldwide, including approximately 500,000 in the United States.<sup>10</sup> Pending litigation will address appropriate sanctions for VW's noncompliance with the CAA and implicate the future of the automobile industry.

## II. The Clean Air Act

“Mobile Sources” encapsulates emissions from cars, trucks, and engines that go into other types of machinery, like lawnmowers and boats.<sup>11</sup> Air pollution from mobile sources accounts for an estimated fifty percent of air pollution in the United States.<sup>12</sup> In 1965, Congress passed National Emission Standards Act (NESEA), an amendment to the CAA, setting the first Federal vehicle emissions standards in Title II Section 201 beginning with 1968-year models.<sup>13</sup> The EPA incorporated NESEA into Title II Section 201 of the CAA regulates the emissions of carbon monoxide oxides and nitrogen oxides from mobile sources.<sup>14</sup> Under Section 202(a), “The Administrator shall by regulation prescribe (and from time to time revise) in accordance with the provisions of this section, standards applicable to the emission of any air pollutant . . . air pollution which may reasonably be anticipated to endanger public health or welfare.”<sup>15</sup> Because vehicles manufactured after model year 1978 are subject to the standards, the offending 2009-

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<sup>8</sup> Drew Kodjak, *EPA's Notice of Violation to Volkswagen*, INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION, <http://www.theicct.org/news/epas-notice-violation-clean-air-act-volkswagen-press-statement> (Oct. 22, 2015).

<sup>9</sup> Jack Ewing, *Volkswagen Says 11 Million Cars Worldwide Are Affected in Diesel Deception*, NEW YORK TIMES, (September 22, 2015), [http://www.nytimes.com/2015/09/23/business/international/volkswagen-diesel-car-scandal.html?\\_r=0](http://www.nytimes.com/2015/09/23/business/international/volkswagen-diesel-car-scandal.html?_r=0) (Oct. 22, 2015).

<sup>10</sup> Jack Ewing, *Volkswagen Says 11 Million Cars Worldwide Are Affected in Diesel Deception*, NEW YORK TIMES, (September 22, 2015), [http://www.nytimes.com/2015/09/23/business/international/volkswagen-diesel-car-scandal.html?\\_r=0](http://www.nytimes.com/2015/09/23/business/international/volkswagen-diesel-car-scandal.html?_r=0) (Oct. 22, 2015).

<sup>11</sup> Clean Air Act of 1970, 42 U.S.C. § 201 (2004).

<sup>12</sup> Clean Air Act of 1970, 42 U.S.C. § 201 (2004).

<sup>13</sup> Clean Air Act of 1970, 42 U.S.C. § 202(a) (2004).

<sup>14</sup> Clean Air Act of 1970, 42 U.S.C. § 201 (2004).

<sup>15</sup> Clean Air Act of 1970, 42 U.S.C. § 202(a) (2004).

2015 VW vehicles in question clearly fall within the parameters of NESA and its emissions guidelines.<sup>16</sup>

As part of this section, the EPA sets limits for different classes of motor vehicles and engines both made in the United States and for those imported into the United States for commerce. Under the CAA, the manufacturer bears the responsibility for conducting emissions testing and reports to the EPA their findings, called “self-testing.”<sup>17</sup> If the engine emissions reported by the manufacturer conforms to standards, the EPA issues a Certificate of Conformity for each model year vehicle, demonstrating that the engine will meet the required emissions limit throughout its useful life.<sup>18</sup> This Certificate allows the manufacturer to sell engines in the United States for up to one year, at which point the Certificate must be renewed.<sup>19</sup> Additionally, Section 110-4A makes it unlawful to install any “emissions control device, system, or element of design” in vehicles for the “purposes of complying with requirements prescribed under this title.”<sup>20</sup> The CAA expressly prohibits the installation of defeat devices to meet Certificate standards, and the alleged unlawful defeat devices used by VW fall within this clear categorical violation of the CAA.<sup>21</sup>

The EPA can reprimand manufacturers who do not comply with the Certificate program. The Act provides strict sanctions for any manufacturer who claims a vehicle is covered by a Certificate, but does not conform to the specifications and requirements of the Certificate.<sup>22</sup> Section 205(c) allows the EPA Administrator to seek civil penalty for violation of the Certificate

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<sup>16</sup> Clean Air Act of 1970, 42 U.S.C. § 201 (2004).

<sup>17</sup> Clean Air Act of 1970, 42 U.S.C. § 208(2) (2004).

<sup>18</sup> Clean Air Act of 1970, 42 U.S.C. § 208(2) (2004).

<sup>19</sup> Clean Air Act of 1970, 42 U.S.C. § 206a(3)(A) (2004); Clean Air Act of 1970, 42 U.S.C. §208(2) (2004); United States v. Volvo, 758 F.3d 330, 333 (2014).

<sup>20</sup> Clean Air Act of 1970, 42 U.S.C. § 110-4A (2004).

<sup>21</sup> Clean Air Act of 1970, 42 U.S.C. § 208(2) (2004).

<sup>22</sup> Clean Air Act Mobile Source Civil Penalty Policy - Vehicle and Engine Certification Requirements, 42 U.S.C. §B5g (2009).

requirements, which include “gaming” the Certification program by misrepresenting data or manufacturing testing conditions.<sup>23</sup> Factors that will be considered in determining appropriate sanctions are: “gravity of the violation, economic benefit of the savings, size of the violator’s business’s the violator’s history of compliance, action taken to remedy the violation, effect of the penalty on the violator’s ability to continue business, and such other matters as justice may require.”<sup>24</sup>

The CAA requires automakers to comply with standards regardless of cost considerations because of the numerous documented public health benefits.<sup>25</sup> Though the EPA does not consider the costs of achieving health and environmental benefits when setting the standard, early studies indicate that the CAA has yielded benefits that far outweigh expenses;<sup>26</sup> in some estimates, total monetized benefits of the act from 1970 to 1990 fall within a range between \$10.5 trillion and \$40.6 trillion. The total cost of compliance for automakers is estimated at \$523 billion during these years, indicating that the benefits of compliance on social welfare and the environment far outweigh the costs. The purpose of the Act is to protect public health because of “Elevated levels of fine particulate matter have be linked to “adverse human health consequences such as premature death, lung and cardiovascular disease, and asthma.”<sup>27</sup> Therefore, no matter the costs, automakers must comply.

### **III. VW Violations**

VW violated numerous requirements of the Clean Air Act. First and most important, installing defeat devices in VW automobiles clearly violates of Section 203-2B, prohibiting

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<sup>23</sup> Clean Air Act of 1970, 42 U.S.C. § 205(c) (2004).

<sup>24</sup> Clean Air Act of 1970, 42 U.S.C. § 205(c) (2004); *United States v. Volvo*, 758 F.3d 330, 346 (2014).

<sup>25</sup> *Benefits and Costs of the Clean Air Act*, EPA (October 28, 2015), <http://www2.epa.gov/clean-air-act-overview/benefits-and-costs-clean-air-act> (Nov. 2, 2015).

<sup>26</sup> *Whitman v. American Trucking Associations Inc.*, 531 U.S. 457 (2001).

<sup>27</sup> *Catawba Cnty. v. EPA*, 571 F.3d 20, 27 (2009).

Any person to manufacture or sell, or offer to sell, or install, any part or component intended for use with, or as part of, any part or component intended for use with, or as part of, any motor vehicle or motor vehicle engine, where a principle effect of the part or component is to bypass, defeat, or render inoperative any device or element of design installed on or in a motor vehicle or motor vehicle engine in compliance with regulations under this title....<sup>28</sup>

Therefore, the use of defeat devices is expressly prohibited in the CAA.

In addition, though VW obtained a Certificate of Conformity for each model and year of the automobiles produced, these certificates reflected inaccurate information on nitrogen oxide emissions.<sup>29</sup> To certify, automakers perform self-testing to classify the vehicle and apply for a Certificate for that class.<sup>30</sup> The EPA classifies the Passat and Jetta, the offending VW cars, as Tier 2 / Bin 5 vehicles.<sup>31</sup> The CAA requires nitrogen oxide emissions not to exceed .07 grams per mile (.043 g/km) for engines at full useful life.<sup>32</sup> Full useful life is defined as 120,000 miles (190,000 km) or 150,000 miles (240,000 km) depending on the vehicle and optional Certification choices.<sup>33</sup> The installed defeat devices manipulated the system and reported emission outputs that were within the legal limits, but did not accurately reflect how VW automobiles actually performed in real-world conditions.<sup>34</sup> In reality, VW automobiles emitted an estimated thirty-five times the legal limit of nitrogen oxides, in flagrant violation of the legal limits established by the EPA and not reflected on their Certificates.

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<sup>28</sup> Clean Air Act of 1970, 42 U.S.C. § 203(2)(B) (2004).

<sup>29</sup> Thompson, Gregory J.; Carder, Daniel K.; et al, *In-Use Emissions Testing of Light-Duty Diesel Vehicles in the United States*. WVU CENTER FOR ALTERNATIVE FUELS, ENGINES, AND EMISSIONS (15 May 2014), available at [http://www.theicct.org/sites/default/files/publications/WVU\\_LDDV\\_in-use\\_ICCT\\_Report\\_Final\\_may2014.pdf](http://www.theicct.org/sites/default/files/publications/WVU_LDDV_in-use_ICCT_Report_Final_may2014.pdf).

<sup>30</sup> Environmental Protection Agency, *Light-Duty Vehicle and Engine Emission Certification*. EPA TRANSPORTATION AND AIR QUALITY, (18 Dec 2015), available at <http://www3.epa.gov/otaq/cert.htm>

<sup>31</sup> Thompson, Gregory J.; Carder, Daniel K.; et al, *In-Use Emissions Testing of Light-Duty Diesel Vehicles in the United States*. WVU CENTER FOR ALTERNATIVE FUELS, ENGINES, AND EMISSIONS (15 May 2014), available at [http://www.theicct.org/sites/default/files/publications/WVU\\_LDDV\\_in-use\\_ICCT\\_Report\\_Final\\_may2014.pdf](http://www.theicct.org/sites/default/files/publications/WVU_LDDV_in-use_ICCT_Report_Final_may2014.pdf).

<sup>32</sup> *Id.*

<sup>33</sup> *Id.*

<sup>34</sup> Drew Kodjak, *EPA's Notice of Violation to Volkswagen*, INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION, <http://www.theicct.org/news/epas-notice-violation-clean-air-act-volkswagen-press-statement> (Nov. 2, 2015).

#### IV. The Emissions Scandal

Research Assistant Professor Arvind Thiruvengadam and his colleagues at West Virginia University's Center for Alternative Fuels, Engines, and Emissions (CAFEE) received a \$50,000 grant in 2012 from the International Council on Clean Transportation (ICCT) to test three diesel cars: the VW Passat, VW Jetta, and BMW X5.<sup>35</sup> ICCT is a nonprofit that aims to provide independent science and testing to government agencies that regulate the environment, such as the EPA.<sup>36</sup> The Council hired the university to perform diesel tests on diesel cars to validate the companies' testing and reports.<sup>37</sup> While examining VW's vehicles in real-world simulations, the company's promises fell dramatically short of expectations. The scientists tested and retested the vehicles. VW had been cheating.<sup>38</sup>

Over the years, VW has built a reputation on "clean diesel," manufacturing cars purporting to run on diesel with improved emissions.<sup>39</sup> Other luxury brands, such as Audi, promulgated this concept, but VW has led the trend.<sup>40</sup> The automaker produced extensive marketing material and developed a brand reputation as the affordable manufacturer for environmentally conscious diesel vehicles.<sup>41</sup> The brand is ubiquitous with a resurgence of diesel cars in the United States and aggressively promoted the performance and fuel economy benefits

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<sup>35</sup> Sonari Ginton, *How a Little Lab in West Virginia Caught the Volkswagen Big Cheat*, NPR (September 24, 2015), <http://www.npr.org/2015/09/24/443053672/how-a-little-lab-in-west-virginia-caught-volkswagens-big-cheat>

<sup>36</sup> Drew Kodjak, *EPA's Notice of Violation to Volkswagen*, INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION, <http://www.theicct.org/news/epas-notice-violation-clean-air-act-volkswagen-press-statement> (Nov. 2, 2015).

<sup>37</sup> Sonari Ginton, *How a Little Lab in West Virginia Caught the Volkswagen Big Cheat*, NPR (September 24, 2015), <http://www.npr.org/2015/09/24/443053672/how-a-little-lab-in-west-virginia-caught-volkswagens-big-cheat> (Nov. 2, 2015).

<sup>38</sup> *Id.*

<sup>39</sup> *Volkswagen Maintains Pole Position in U.S. Clean-Diesel Market*, VOLKSWAGEN DAS BLOG (10 January 2013), <http://media.vw.com/release/637/> (Nov. 2, 2015).

<sup>40</sup> *Audi A3i Clean Diesel Driven Car Reviews*, AUDI (July 15, 2010), <http://drivencarreviews.com/2010/07/audi-a3-tdi-clean-diesel/> (Nov. 2, 2015).

<sup>41</sup> Christopher Babadjanian, *Is there a Punishment That Will Fit Volkswagen's Crime?*, NORTH CAROLINA JOURNAL OF LAW AND TECHNOLOGY BLOG (2015), <http://ncjolt.org/is-there-a-punishment-that-will-fit-volkswagens-crime/> (Nov. 2, 2015).

of VW diesel vehicles.<sup>42</sup> According to the Diesel Technology Forum, a decade ago, only thirteen percent of consumers looking to purchase a car considered going diesel. Today, forty percent of consumers consider diesel.<sup>43</sup> In 2013, VW reported more than seventy percent of all “clean diesel passenger vehicle sales.”<sup>44</sup>

## V. Defeat Devices

After receiving ICCT’s research, on September 15, 2015, the EPA issued a Notice of Violation to Volkswagen.<sup>45</sup> This notice alleged that the manufacturer had installed software controls, defeat devices that only enabled emissions control during lab testing in their Turbocharged Diesel Engine (TDI) automobiles.<sup>46</sup> The offending program was installed on cars made between 2009 and 2015, an estimated eleven million cars worldwide, 500,000 of which are cars owned and driven in the United States.<sup>47</sup>

Nearly all diesel cars use a selective catalytic reduction process, which breaks down nitrogen oxide into nitrogen and water. This breakdown of nitrogen oxide into nitrogen and water creates a combustion which produces energy. The greater gas expansion caused by the combustion results in greater power output and more torque, which make diesel the preferred engine for vehicles like heavy-duty trucks that require greater towing power.<sup>48</sup> Because the combustion process releases a large amount of air pollution, above the legal threshold set by the CAA, the engines add urea to the mix with a urea-injection system, a fluid tank that neutralizes

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<sup>42</sup> Alex Davies, *The Real Winner in the VW Diesel Scandal? Hybrid Cars*, WIRED (September 24, 2015), <http://www.wired.com/2015/09/volkswagen-diesel-cheating-scandal-is-good-for-hybrid-cars/> (Nov. 2, 2015).

<sup>43</sup> *Id.*

<sup>44</sup> *Volkswagen Maintains Pole Position in U.S. Clean-Diesel Market*, VOLKSWAGEN DAS BLOG (10 January 2013), <http://media.vw.com/release/637/> (Nov. 2, 2015).

<sup>45</sup> Jack Ewing, *Volkswagen Says 11 Million Cars Worldwide Are Affected in Diesel Deception*, NEW YORK TIMES, (September 22, 2015) [http://www.nytimes.com/2015/09/23/business/international/volkswagen-diesel-car-scandal.html?\\_r=0](http://www.nytimes.com/2015/09/23/business/international/volkswagen-diesel-car-scandal.html?_r=0) (last visited Sept. 22, 2015); Notice of Violation, ENVIRONMENTAL PROTECTION AGENCY (18 Sept. 2015) available at <http://www.epa.gov/vw>.

<sup>46</sup> *Id.*

<sup>47</sup> *Id.*

<sup>48</sup> Tia Ghose, *Volkswagen Scandal: Why Is It So Hard to Make Clean Diesel Cars?*, LIVE SCIENCE (September 24, 2015), <http://www.livescience.com/52284-volkswagen-scandal-clean-diesel-challenges.html> (Nov. 2, 2015).

nitrogen oxide emissions and allow diesel vehicles to pass emissions tests. This system reduces emissions by 70-90%.<sup>49</sup> While the urea-injection systems allow the engines to meet standards, they also contribute cost and weight to the vehicle, adding tons on the vehicle to slow down performance and thousands of dollars to the sticker price--\$5,000 to \$8,000 per car.<sup>50</sup> VW scammed consumers and the EPA into believing their vehicles did not require a urea-injection system, but in reality, the company was relying on defeat devices.<sup>51</sup>

## **VI. Past Case Law On Defeat Devices**

Defeat devices are not a novel concept in the manufacturing industry and are reflected in its regulation and case law. In 1990, the government alleged that General Motors (GM) installed defeat devices in close to half a million Cadillac's in violation of the CAA. The defeat devices overwhelmed the catalytic converter that measures emissions control during testing. The complaint alleged that GM may have been responsible for illegal emissions of 100,000 tons of carbon monoxide. As part of the settlement, GM agreed to pay 11 million dollars to the EPA and the Department of Justice, recall the offending cars, and develop a computer chip for more accurate emissions readings.<sup>52</sup>

In *United States v. Volvo Powertrain Corp.*, Volvo owned and operated a subsidiary company that produced engines not complying with the EPA's model year nitrogen oxide

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<sup>49</sup> Alex Davies, *The Real Winner in the VW Diesel Scandal? Hybrid Cars*, WIRED (September 24, 2015), <http://www.wired.com/2015/09/volkswagen-diesel-cheating-scandal-is-good-for-hybrid-cars/>

<sup>50</sup> *Id.*; Mike Brown, *Volkswagen Emissions Scandal: What Is A 'Defeat Device,' How Does It Work, And Why Can't You See It?*, INTERNATIONAL BUSINESS TIMES, Volkswagen Emissions Scandal: What Is A 'Defeat Device,' How Does It Work, And Why Can't You See It?, (Sept. 24, 2015).

<sup>51</sup> Alex Davies, *The Real Winner in the VW Diesel Scandal? Hybrid Cars*, WIRED (September 24, 2015), <http://www.wired.com/2015/09/volkswagen-diesel-cheating-scandal-is-good-for-hybrid-cars/>; Mike Brown, *Volkswagen Emissions Scandal: What Is A 'Defeat Device,' How Does It Work, And Why Can't You See It?*, INTERNATIONAL BUSINESS TIMES, Volkswagen Emissions Scandal: What Is A 'Defeat Device,' How Does It Work, And Why Can't You See It?, (Sept. 24, 2015).

<sup>52</sup> *General Motors Corp. v. United States*, 1990 U.S. Dist. LEXIS 17986

emissions standards under 42 U.S.C § 7521(a)(1), 7522(a)(1), 7525(a)(1).<sup>53</sup> The court held that Volvo was liable for their subsidiary's non-compliance and ordered Volvo Powertrain to pay 72 million dollars in damages. In addition, the court weighed several elements in the apportionment of a sanction, including: "gravity of the violation, economic benefit of the savings, size of the violator's business's the violator's history of compliance, action taken to remedy the violation, effect of the penalty on the violator's ability to continue business, and such other matters as justice may require."<sup>54</sup> These court considerations are now reflected in the CAA determination of sanctions with the 2014 updates to the Act.

Also in 2014, Korean automakers Hyundai and Kia reached a settlement with the EPA for 100 million dollars, the largest in CAA history, for providing inaccurate information for Certificates.<sup>55</sup> The complaint alleged that the car companies sold close to 1.2 million cars and sports utility vehicles in model years 2012 and 2013 whose design specifications "did not conform to specifications the companies certified to the EPA, which led to misstatements of greenhouse gas emissions."<sup>56</sup> The EPA discovered these misrepresentations during audit testing. While Kia and Hyundai were not using defeat devices in the offending vehicles, the companies chose favorable results from their testing data to report to the EPA and misrepresented actual emissions outputs on Certificates, violating the CAA.<sup>57</sup>

There is no shortage of case law where automakers circumvent the EPA's CAA requirements for emissions standards. Later cases include more sanctions against defeat devices and misrepresentations of emissions data to federal authorities. The court is unanimous in

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<sup>53</sup> Clean Air Act of 1970, 42 U.S.C § 7521 (2015).

<sup>54</sup> Clean Air Act of 1970, 42 U.S.C § 205(c)(2) (2015); *United States v. Volvo*, 758 F.3d 330, 333 (2014).

<sup>55</sup> Press Release, *United States Reaches Settlement with Hyundai And Kia in a Historic Greenhouse Gas Enforcement Case*, DEPARTMENT OF JUSTICE (3 November 2014), <http://www.justice.gov/opa/pr/united-states-reaches-settlement-hyundai-and-kia-historic-greenhouse-gas-enforcement-case> (Oct. 2, 2015).

<sup>56</sup> *Id.*

<sup>57</sup> *Id.*

treating these activities as violations of the CAA due to the gravity of installing defeat devices in automobiles, the economic benefit of savings realized by the automaker, size of the affected business, history of compliance, and action taken to remedy the violation.<sup>58</sup>

## VII. Considering The VW Case

As discussed, a breadth of case law on defeat devices and violations of CAA's mobile emission standards exists, but to date, not a single case has addressed the reach and impact of VW's violations. Given that an estimated eleven million cars were installed with defeat devices, this estimate is twenty-two times the number of automobiles affected in *US v. General Motors*.<sup>59</sup> Even in the settlement between Hyundai and Kia, the use of defeat devices was purported in only an estimated 1.2 million vehicles.<sup>60</sup> The sheer volume of the automobiles affected will likely play a pivotal role in the court's determination for VW sanctions.

VW also misreported emissions data to the EPA throughout the certification process. Like in the Hyundai and Kia settlement assessment, the automaker provided incorrect information for certifications and misstated the actual emissions standards. In the Hyundai and Kia case, however, the misrepresentation of data was merely a selection of which data to present. An infraction, certainly, but one slight when compared to willfully designing and installing computer software to defraud the EPA. Speculation surrounds the outcome of this litigation, and some estimate that VW could be responsible for more than 18 billion dollars in fines, 37,500

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<sup>58</sup> Clean Air Act of 1970, 42 U.S.C. § 205(c)(2) (2015).

<sup>59</sup> Jayne O'Donnell, *Emission Defect Known to be Wrong, but Pressures Remain*, USA TODAY (22 September 2015), <http://www.usatoday.com/story/money/cars/2015/09/22/vw/72617118/> (Oct. 2, 2015).

<sup>60</sup> Press Release, *United States Reaches Settlement with Hyundai And Kia in a Historic Greenhouse Gas Enforcement Case*, DEPARTMENT OF JUSTICE (3 November 2014), <http://www.justice.gov/opa/pr/united-states-reaches-settlement-hyundai-and-kia-historic-greenhouse-gas-enforcement-case> (Oct. 2, 2015).

dollars for each vehicle. In addition to the substantial civil penalties, the company may also be subject to criminal penalties.<sup>61</sup>

### **VIII. Inappropriate Incentives and Deterrence**

Due to the egregiousness of VW's infraction, the EPA will likely assign unprecedented sanctions using the formula in *United States v. Volvo Powertrain Corp.* to apportion an amount of damages for VW's noncompliance. Previously, automakers responsible for deaths have received large monetary penalties for their wrongdoing because these were brought under criminal actions. For example, GM received fines of 900 million dollars for hiding the fatal ignition-switch defect in May 2015, which caused cars to turn off while the car was in drive.<sup>62</sup> Similarly, The Department of Justice (DOJ) ordered a criminal penalty of 1.2 billion dollars for Toyota's acceleration defect in March 2014.<sup>63</sup> The DOJ adjudicated the issue because it was not one of environmental law, but rather one where Toyota hid a problem with their vehicles that resulted in criminal infractions.<sup>64</sup> In these instances, the infractions led to human death. In the present case, VW's violations have not resulted in casualties, but one may predict that the EPA will consider the harmful effects on public health as a direct result of environmental pollution in their calculus.<sup>65</sup> Like with Toyota, the DOJ may also choose to become involved in the litigation if VW's actions can be connected with human deaths. VW may be subject to criminal, as well as civil sanctions.

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<sup>61</sup> Jerry Hirsch, *VW cheated on U.S. pollution tests for 'clean diesels'*, LOS ANGELES TIMES (September 18, 2015), <http://www.latimes.com/business/autos/la-fi-hy-volkswagen-probe-20150918-story.html> (Oct. 2, 2015).

<sup>62</sup> Bill Vlasic, *GM's Ignition Switch Death Toll Hits 100*, NEW YORK TIMES, [http://www.nytimes.com/2015/05/12/business/gms-ignition-switch-death-toll-hits-100.html?\\_r=0](http://www.nytimes.com/2015/05/12/business/gms-ignition-switch-death-toll-hits-100.html?_r=0) (Oct. 2, 2015).

<sup>63</sup> Brian Ross, *Toyota to Pay \$1.2B for Hiding Deadly 'Unintended Acceleration'*, ABC NEWS, <http://abcnews.go.com/Blotter/toyota-pay-12b-hiding-deadly-unintended-acceleration/story?id=22972214> (Oct. 19, 2015).

<sup>64</sup> *Id.*

<sup>65</sup> Christopher Babadjanian, *Is there a Punishment That Will Fit Volkswagen's Crime?*, NORTH CAROLINA JOURNAL OF LAW AND TECHNOLOGY BLOG (2015), <http://ncjolt.org/is-there-a-punishment-that-will-fit-volkswagens-crime/> (Oct. 2, 2015).

In addition, this may also be an opportunity for the EPA to deter future infractions. Some posit that it is economically profitable to cheat the CAA regulations.<sup>66</sup> Compliance adds thousands of dollars to the sticker price of a vehicle for consumers already conscientious of vehicle pricing. In addition, compliance diminishes vehicle performance. It is more profitable for automakers to cheat the system and hope they will not be caught in an infraction.<sup>67</sup> Many also criticize the self-certify system as one that encourages breaking the law.<sup>68</sup> The EPA may consider assigning blame and damages as an avenue to deter automakers in the future from similar exploits and emissions scandals.<sup>69</sup> If this is the case, the penalty assigned to VW could be astronomical.

## **IX. Conclusion**

The opinion appears to be unanimous. VW cheated. Use of defeat devices was illegal and severely noncompliant with the standards and values promulgated in the CAA. The question, however, remains in how the EPA will respond with civil sanctions, and how the Department of Justice may respond with criminal penalties. The severity of the infraction and magnitude of vehicles affected is unprecedented.

The issue has also presents probing questions on the future of emissions regulation, the efficacy of the current regulatory scheme, and instituting new methods of encouraging compliance in the automobile industry. In an environment with incorrect incentives, the EPA may need to consider revisiting the economic repercussions of noncompliance with standards. In addition, the automobile industry may see the regulatory bodies more involved in the testing and

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<sup>66</sup> *Automakers have 'incentive' to cheat emissions tests, analyst says*, TRIBLIVE BUSINESS (30 September 2015), <http://triblive.com/business/headlines/9178728-74/emissions-company-devices#axzz3puQZpt3u> Oct. 2, 2015).

<sup>67</sup> *Id.*

<sup>68</sup> *Id.*

<sup>69</sup> *Jennifer Scholtes, EPA turns focus to VW recall orders*, POLITICO (21 September 2015), <http://www.politico.com/tipsheets/morning-transportation/2015/09/pro-morning-transpo-210304> (Oct. 2, 2015).

monitoring of emissions outputs. Without a doubt there will be significant efforts to make the VW emissions scandal that was uncovered by an unsuspecting group of scientists at West Virginia University, the last.