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Preprint · March 2018

DOI: 10.13140/RG.2.2.18599.44961

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## **Case Study: The Volkswagen Emission Scandal**

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### **Abstract:**

Our environment has been the first victim of humans' actions since the industrial revolution in UK in 1800's. The realization from scientists to the environmental violations by humans motivated the calls for actions and eventually managed to enforce environmental regulations on nations to save environment. Cars emit greenhouse pollutants and carbon monoxide, nitric oxides, and other particulates from fuel combustions that are unhealthy to the environment and therefore rules have been enforced to reduce them as well. In September 2015, it was found out that Volkswagen has been violating the emissions rates allowed since 2009 by deception laboratories through programming an emission control to be activated only in laboratories test but not in streets driving. This excess of NOx emissions has affected human's health in US and Europe as a result and multiple financial sanctions on the company has been applied and alternative environmental solutions were provided.

### **Keywords:**

EPA, Volkswagen, Diesel Engines,

### **Introduction:**

In September 2015, The Emission gate also more commonly referred to as The Volkswagen Scandal came to the public when the United States Environmental Protection Agency (EPA) issued a notice of violation of the Clean Air Act to Volkswagen Group of Germany. The EPA had discovered that the German giant had programmed its Turbocharged Direct Injection (TDI) diesel engines to be under emissions control during laboratory emission test by meaning that when tested in laboratories the Volkswagen motors are below the NOx output maximum limit allowed in the US. However, in real life the NOx were up to 40 times higher <sup>1</sup>. Volkswagen's motors from 2009 to 2015 model were all programmed with the software that programmed their TDI

engines and estimated around eleven million cars around the world <sup>2</sup>.

### **Motive Behind Rigging Diesel Engines Issue:**

The reason why Diesel engines are needed over gasoline are due their economical values as easy repaired and tendency to be more enduring over time as well as fuel efficiency. In terms of economy, Diesel engine can go more miles per gallon compared to petrol engines and this is since they burn fuel at higher temperature. This results in a higher production of Nitrogen Oxide compared to their counterparts of Petrol engines. However, they need to have air and fuel filters changed frequently as well as they are costly to produce. The VW system had in their engines a trap to Nitrogen Oxide. However, more fuel was needed to trap Nitrogen Oxide and this was only activated during the laboratory testing as the software programmed it that way and hence the explanation of the scandal.<sup>3</sup> Volkswagen's chairman Hans-Dieter Pötsch at that time in December 2015 declared that the decision to manipulate the Diesel Engines test was made in 2005 and this was due to EPA's strict regulations on automobile industries. <sup>4</sup>

### **Diesel Engines and Health**

The Diesel exhausts have been associated with lung cancer. Nitric Dioxide is released with other small particles from the engines of diesel and they simultaneously can penetrate lungs. This penetration causes around 29,000 in UK according to World Health Organization (WHO). In WHO report a long-term exposure of NOx has been natively linked with bronchial asthma in children's. Another study by UK's Department for Environment, Food, and Rural Affairs showed that 23, 500 premature deaths caused by NOx <sup>5</sup>.

A result of excess of NOX produced by VW between 2008 and 2015 59 premature deaths are estimated in the United States. Most of the deaths are due to the small particulate pollutants (87%) while the other (13%) are due to the Ozone. The

Environmental Research Letters Institution (ERL) estimated if this vehicles were taken back from roads by the end of 216, around 130 early deaths would be avoided <sup>6</sup>.

### Impact of Volkswagen Diesel Scandal Economically

Only one year before the scandal had come to the light, VW was the second largest in automobile industry. Following the scandal, the company has been dealing with overwhelmingly many legal and public relations office and they had to cope with a new adjustment they had to make from employing three public relations firms to deal with the crisis as well as they had to deal with international regulations in all of countries they are operating in around the globe which costed them a lot of money. In addition, the sales of VW cars decreased from 2.44 million in September 2014 to 2.45 million in September 2015 and a total net loss of 1.84\$ billion after the scandal. On Monday September 21st 2015 VW's stock were sold off immediately which resulted a loss of 16.9 Billion of its former market value <sup>7</sup>. VW's stock went down to 23.08 on October 2nd, 2015 although it was only 2 weeks ago 38.03% on September 17th. Figure 1 obtained from Gates et el <sup>8</sup> shows

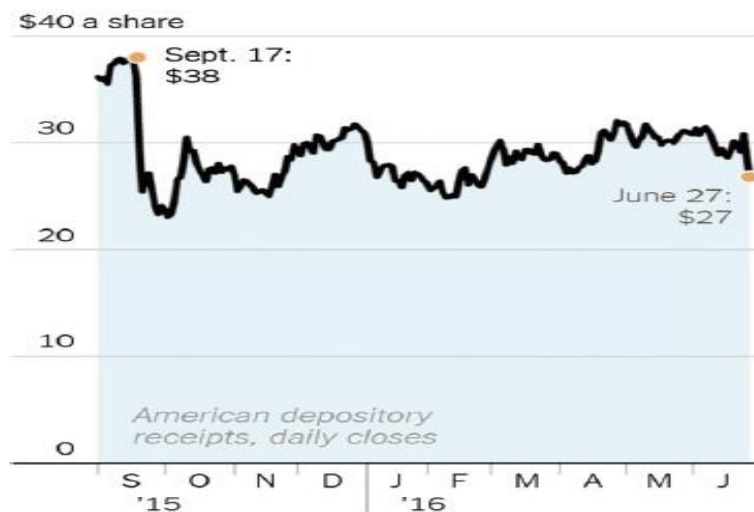


Figure 1. Source: Gates et el

## **Case Closure**

A California state Judge Charles Breyer, has offered a planned supported by US government and several environmental agencies to seal down the case by giving the options to owners of Volkswagen tow (2) liter diesel cars to either fix their engines according to US emission standards or sell back the cars to VW with loan cancellation in case if the car is still on loans. The judge as well proposed considerable compensation and remediation hardship for any environmental harms caused by VW. <sup>9</sup>

In the settlement, a 2.7 BN\$ will be paid for environmental mitigation and \$2 billion to promote zero-emissions vehicles and \$603 million for claims by 44 states, Washington, D.C., and Puerto Rico. The total settlements for all courts and customer repayments are estimated to be 15 BN\$

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