

Community Impact Statement Attachment
In the matter of R v. Volkswagen Aktiengesellschaft

Name of the community on behalf this statement is made:

My name is Muhannad Malas and I am here to speak as a concerned citizen and public health advocate about the serious health effects potentially caused by Volkswagen's emission scandal. My statement will speak to:

- the adverse health impacts potentially experienced by the Canadian public at large as a result of the excess pollution that Volkswagen caused by importing vehicles whose emissions substantially exceeded Canadian emission standards; and,
- the emotional impact to the people who purchased a supposedly "clean" diesel car that turned out to be much more damaging than advertised.

I come to this task in my role as the toxics program manager at Environmental Defence, an environmental charity and community of about 260,000 supporters across Canada, and as an instructor in global health at McMaster University. These experiences, in addition to my academic training in human biology and graduate studies in public health, have enabled me to grasp the inextricable connection between environmental exposures to air pollution and the health of communities.

I add that while I am reading this statement today, it also represents the views of Ecojustice, which is Canada's largest environmental law charity. This statement was peer-reviewed by Dr. Elaine MacDonald who is the director of Healthy Communities at Ecojustice. The defence of clean air falls within the mandates of both Environmental Defence and Ecojustice.

Explain how the statement reflects this community's views:

When this Community Impact Statement was drafted, the facts upon which the plea agreement is based were not known. However, based on the charges laid against Volkswagen in Canada, the facts admitted by Volkswagen when it plead guilty in the United States on January 11, 2017, combined with public information available through the media, we understand the following:

- Volkswagen secretly rigged its diesel cars with a so-called "defeat device" to avoid government air pollution standards so that when tested in the normal way, these standards were met. But these same cars, once driven on the road by the public, would emit in their exhaust up to 35 times the legal allowable limit of air pollutants. Volkswagen imported approximately 128,000 rigged diesel vehicles in Canada over about eight years, from 2008 to 2015.

This Community Impact Statement will outline the adverse health impacts potentially experienced by the Canadian public as a result of the excess pollution that Volkswagen caused by illegally

importing vehicles whose emissions so greatly exceeded Canadian emission standards. We all breathe, and we all experience risk when we breathe in polluted air. This risk becomes greater when the ambient level of diesel pollutants is elevated through illegal conduct.

Our Community Impact Statement is especially relevant because Volkswagen, through its counsel, stated to this Court on December 13, 2019, that **“harm to human health ... is denied and disputed by Volkswagen in these proceedings”**. In stating so, Volkswagen rejects that it has had any impact on the community and the people within it and is unrepentant. We aim in this Community Impact Statement to show that credible sources of information, entirely in the public domain, show there is great health harm associated with Volkswagen’s criminal conduct, which has victimized the community and individuals within it.

Physical and Economic Impacts:

The following comments about health impacts first have to be understood against this backdrop: Volkswagen is pleading guilty that its diesel cars were secretly rigged to emit as much as 35 times the legal amount of Nitrogen Oxides (known as NOx) in exhaust emissions, and that it illegally imported 128,000 vehicles of those cars into Canada.

Doing the arithmetic, those 128,000 illegal Volkswagen cars, each being up to 35 times dirtier than allowed, is equivalent to adding up to 4.5 million legal cars on the road in Canada. That is a huge number, and so it adds a huge amount of air pollution.

Air pollution is a major public health threat in Canada. According to Health Canada, every year 14,000 to 15,000 Canadians die prematurely because of air pollution. While air pollution is the *cause* of illness, the machines that create it such as cars are the *agent* of illness. Health Canada, similar to other foreign government authorities, warns that diesel pollution is especially harmful to health. Health Canada says “compared with other mobile sources, diesel vehicles and engines contribute significantly to nitrogen dioxide (NO₂) and PM_{2.5} emissions”—two key pollutants emitted in diesel engine exhaust. (NO₂ is a type or constituent of NO_x).

And, according to Health Canada, diesel pollution kills. In its assessment of the health risks of diesel exhaust, Health Canada states “the modelling undertaken estimates that on-road diesel emissions are associated with 320 premature mortalities for 2015 (valued at \$2.3 billion), with 65% and 35% of the estimated mortalities attributable to ambient PM_{2.5} and NO₂, respectively.”

I emphasize that the 320 deaths Health Canada forecasted are likely underestimated as the emissions considered by Health Canada do not represent the real-world emissions diesel vehicles, which as we all now know, are tremendously greater due to deliberate emission cheating, like the cheating that Volkswagen admitted to carrying out.

There are other health harms, attested to by leading authorities. The World Health Organization lists diesel exhaust as a Group 1 human carcinogen, meaning a substance that is known to cause cancer, and says it is specifically associated with lung cancer.

Health Canada concurs with this conclusion. In its risk assessment of diesel exhaust, Health Canada states that there is “sufficient evidence to conclude that diesel exhaust is carcinogenic in humans and is specifically associated with the development of lung cancer.” The assessment adds that “the population health risks are considered to be significant given the ubiquitous presence of diesel exhaust emissions in Canada”.

These health impacts come not just from big diesel trucks, but also light-duty diesel vehicles (LDDVs) like Volkswagen’s cheating cars. Health Canada writes that “LDDVs are concentrated in populated areas”, meaning that harm occurs in urban exposed communities. These health risks would be experienced most strongly in Canada’s urban centres such as Toronto, Montreal, Calgary and Vancouver, where both population density and vehicle density is highest. Simply put, more harm would be caused when people and diesel cars are in closer quarters.

Short and long term exposures to diesel exhaust emissions, particularly NO_x, the group of pollutants associated with Volkswagen’s regulatory violations, are associated with a host of other adverse respiratory impacts. Both types of exposure matter, because the cheating Volkswagen diesel cars operated on Canadian roads for several years.

Short-term exposure to diesel vehicle emissions can aggravate asthma and other lung conditions and consequently increase the rate of hospitalization and emergency care visits. Long term exposure is also associated with reduced lung function in adults and children; reduced lung function growth, which is permanent in children; and can lead to the development of respiratory illnesses such as asthma or lung infections (e.g. pneumonia).

Health Canada writes that “Diesel emissions are also associated with significant numbers of acute respiratory symptom days, restricted activity days, asthma symptom days, hospital admissions, emergency room visits, child acute bronchitis episodes and adult chronic bronchitis cases across Canada.”

In other words, diesel emissions make sick people sicker and make healthy people sick.

Furthermore, Health Canada’s *Human Health Risk Assessment for Ambient Nitrogen Dioxide* demonstrates that adverse health effects are occurring at ambient NO₂ concentrations that are common in Canada. Health Canada states that the “public health impacts of ambient NO₂ are substantial and are expected to remain important as the population ages and the pool of older adults

increases, especially given the higher underlying death and disease rates in this age group” due to respiratory illness.

There is more to diesel exhaust than just NOx. Some air pollutants are caused secondarily by NOx emissions, which after exiting the tailpipe undergo chemical reactions in the atmosphere. For example ground-level ozone, or the pollutant mix called “smog”.

I will leave those aside and instead turn to another serious diesel pollutant: very fine particulate matter measuring under 2.5 microns (or PM2.5 for short). NOx gases emitted by diesel cars also contribute significantly to PM2.5 levels in the air when these gases undergo chemical reactions in the atmosphere. Diesel-associated PM2.5 has extremely harmful health effects on the community. These also include serious respiratory health impacts as well as increasing the risk of lung cancer.

According to a study conducted by Public Health Ontario and Cancer Care Ontario, two arm’s-length government agencies, “an estimated 560 cancer cases (specifically, lung cancer cases) per year (range 290 to 900) are attributable to environmental exposure to PM2.5 via inhaling outdoor air in Ontario.” The report adds “Exposure to PM2.5 continues to be a significant public health concern in Ontario, as illustrated by the estimated 560 (range 290 to 900) new cancer cases attributable to PM2.5 exposure. In addition to cancer, PM2.5 also contributes to other chronic diseases, including cardiovascular and respiratory diseases. PM2.5 is a common component of air pollution; it is a by-product of fuel combustion and is also formed through chemical reactions in the air. The Air Quality in Ontario 2014 Report identified motor vehicle traffic, industrial sources, and residential fireplaces and woodstoves as key contributors to outdoor or ambient PM2.5 in Ontario.”

Who is hurt by this? Essentially, everyone who breathes, but even more so the vulnerable – children, asthmatics, pregnant women and the elderly – who have a greater sensitivity to air pollutants such as NO2 and PM2.5 and for whom the resulting harm would be greater.

As to scientific evidence demonstrating specifically the physical harm caused by Volkswagen’s cheating vehicles, several credible studies conducted in the United States and Germany provide compelling proof of such harm.

A study by economists at the Federal Reserve Bank of Chicago and Northwestern University found that an increase of just one additional illegal Volkswagen diesel car vehicle per 1,000 vehicles (that is, a 0.1% change to the vehicle make-up) is associated with a 1.9% increase in the rate of low birth weight and an 8% increase in asthma ER visits among children in the United States. Overall, the study estimated that the 607,781 rigged vehicles in the United States over a period of 7 years contributed to 538,611 cases of low birth weight—close to one low birth weight baby per car.

Canada’s roads saw nearly one-fourth the number of rigged Volkswagen vehicles in the US during a comparable time period. Since the hazardous nature of diesel emissions from these vehicles generally

doesn't differ from country to country, it is scientifically reasonable to infer that cheating vehicles in Canada contributed significantly to asthma ER visits among children and to low birthweight outcomes here as well.

Another U.S. based scientific study investigating the effects of excess NOx emissions caused by cheating Volkswagen cars found that “the total extra NOx emitted over one year of operation would result in 5 to 50 premature deaths, 687 to 17,526 work days with restricted activity, and economic costs of \$43,479,189 to \$423,268,502” (those are US dollars). I emphasize that is the one year figure, and hence the adverse effects are likely much greater considering most of these cars were operating for multiple years.

In Germany, Volkswagen's home country, scientists concluded that over the period of 7 years during which these cars were sold, “the median mortality impacts from VW excess emissions in Germany to be 1,200 premature deaths in Europe, corresponding to 13,000 life-years lost and 1.9 billion EUR in costs associated with life-years lost.” Another German study found that the excess emissions from cheating Volkswagen vehicles in the U.S. and Germany caused “45 thousand disability-adjusted life years (DALYs)” and 39 billion US dollars in health costs.

While these studies were not conducted in Canada, human biology is generally the same in Canada as in the U.S. and Germany. Volkswagen's cheating was also relatively the same everywhere. These studies are not only indicative of the adverse health effects in the jurisdictions analyzed, but are all illustrative of the seriousness and magnitude of harm caused by excess emissions produced from rigged Volkswagen cars here in Canada.

Volkswagen's conduct was intentional, calculated and imposed serious health risks on some of the most vulnerable members of an unsuspecting public. Volkswagen made considerable amounts of profit through its fraudulent activities. We want to stop this sort of environmental and public health crime from happening again in the future. And for that to happen, the punishment needs to be severe enough to deter other business actors from engaging in such a scheme. There needs to be a strong message sent to all Canadians about the importance and compelling need to respect pollution and environmental laws in Canada

Emotional Impact:

Volkswagen's crime also caused severe emotional and psychological impacts on the community. Specifically, Volkswagen's fraud had a particularly insidious impact on the target market for the vehicles. These diesel cars were marketed as “clean” diesel and gained quick popularity in Canada due to concerns about climate change and environmental pollution. In fact, these cars were so well-received that two popular models, the 2009 Volkswagen Jetta TDI and 2010 Audi A3 TDI, were awarded the prestigious Green Car of the Year award in 2009 and 2010, respectively. Both of these

models were illegally imported into Canada according to the Canadian charges against Volkswagen. These awards were later returned after Volkswagen's cheating was revealed.

Essentially, tens of thousands of Canadians were cheated and lied to and later discovered that their car may have been emitting the equivalent of up to 35 times the amount of harmful NO_x gases as the car they thought they were buying. For them it was like they were driving up to 35 cars at once in terms of pollution contribution. For a person who chose these Volkswagen cars because they thought they were clean, this realization is very disturbing and upsetting.

(enclosed are examples of "clean" diesel Volkswagen advertisements)

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