



# Silent but Deadly?

The safety implications of quiet electric and hybrid vehicles for blind and partially sighted people.



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# Guide Dogs' Silent But Deadly report

## Executive Summary

As a charity dedicated to the independent mobility of blind and partially sighted people, Guide Dogs is concerned about the lack of noise generated by quiet electric and hybrid vehicles. Guide Dogs supports moves to create international standards for sounds to be generated by quiet electric and hybrid vehicles when manoeuvring at low speeds, especially at less than 20 miles per hour (MPH). Guide Dogs encourages the UK government and manufacturers of UK vehicles to adopt these recommendations when ratified. However, it is vital that the standards adopted are stringent enough to ensure the safety of the UK's roads.

The conclusions of the report show that pedestrians and vulnerable road users are at a substantially increased risk from near-silent electric and hybrid vehicles than traditional internal combustion engines (ICE). The reduction in noise reduces the ability to detect quiet electric and hybrid vehicles showing this is a safety issue that needs urgent attention. With government initiatives in the UK encouraging the ownership of these vehicles through subsidies or tax benefits and manufacturers bringing out more quiet electric and hybrid vehicles, we need to introduce new safety standards as a matter of urgency.

The report has shown that when participants were asked to listen to a petrol car and an electric car both travelling at 5 MPH, they could detect the petrol car from 28 feet away and the electric car at 7 feet away, meaning that the electric car was only one second away from impact.

The Silent but Deadly report highlights that children are taught the Green Cross Code to "Stop, Look and Listen" for approaching vehicles, trying to reduce the risk at crossing roads. But as nearly 80% of our awareness to danger is through our hearing, rather than what we see, we are now placing people at greater risk of road traffic accidents. Research within the Silent but Deadly report has found that hybrid vehicles had to be 65 per cent closer to a pedestrian before they could be audibly detected.

The Government is so concerned about the increased risk of accidents to young people wearing earphones that it has launched the THINK campaign to highlight the dangers of not listening out for traffic. The report stresses that the lack of noise associated with quiet electric and hybrid vehicles presents a new danger and needs new regulations to be introduced to ensure people's safety.

When Lotus Engineering began constructing hybrid vehicles, they decided to look at creating artificial engine noises due to safety concerns. This was because their first electric car caused a number of near misses in the factory as staff could not hear it approaching on the factory floor<sup>1</sup>.

This report highlights the need for artificial engine noises to be detectible by pedestrians and vulnerable road users such as cyclists to make them aware of a vehicle approaching and to help them to ascertain its direction of travel. The key element is that the artificial noise must be audible and provide sufficient warning to pedestrians.

Though there are undoubtedly environmental benefits from these types of vehicles, such as reduced CO2 emissions, it is clear that manufacturers need to introduce engine noises. The noises must give an indication of the state of the engine (whether accelerating or decelerating) and the vehicle's size, and it must sound like a vehicle and not something from Star Wars.

The introduction of quiet electric and hybrid vehicles has caused major concern for blind and partially sighted people. As sound plays a strong part in detecting traffic and deciding if it is safe to cross, if you cannot see a vehicle or hear it, then you increase the potential danger of trying to cross a road.

At present, current noise levels mean that an average city street produces about 70 decibels in background noise. While noise levels vary among quiet electric and hybrid cars, when travelling through areas where pedestrians are likely to be, the noise level is at a maximum of 30-50 decibels. The concerns about the detectability of quiet electric and hybrid vehicles are less once they are travelling at speeds of approximately more than 20 miles per hour, as factors such as tyre noise mean that overall, the vehicles can be audibly detected through means other than engine noise.

There are currently moves across the world by legislators to regulate the safe use of quiet electric and hybrid vehicles. At present, one of the main concerns with much of the enacted and proposed legislation is that there is the option of a 'pause switch', which enables the driver to turn off the vehicle's audible system. The other is that there has been little focus on any minimum noise levels, making it difficult to ascertain

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<sup>1</sup> Barkham, P.: *Can a car be too quiet?*; The Guardian; December 4 2008 [Internet] Available at: <http://www.guardian.co.uk/environment/2008/dec/04/green-living-electric-cars>

how detectable these vehicles will be once the laws have been implemented.

## **Recommendations**

Guide Dogs wants to ensure the safety of pedestrians, vulnerable road users and especially blind and partially sighted people in relation to the threats and potential dangers posed by quiet electric and hybrid vehicles. These include:

- That the vehicle is audible regardless of location and speed
- That any noise-generating system takes account of when a vehicle is operating in quieter conditions
- That the noise-generating system indicates the direction of the car and what it is doing, particularly if it is stationary in traffic
- That the noise generated sounds like a vehicle and replicates the sound made by a similar vehicle with an internal combustion engine performing the same manoeuvres
- That systems do not have a "pause switch" so that drivers cannot turn off the system at will

## **Specific Concerns of Blind and Partially Sighted People**

One of the environmental cues blind and partially sighted people use to support them with their navigation of the world around them is the noise generated by road traffic, as it can provide vital information to them about their environment. Examples of this include:

- Support in the location of major roads to access public transport
- Act as a guide when walking along the pavement
- Assist with determining the direction of traffic
- Support in the negotiation of junctions and the sequence of traffic
- Support in the decision when to cross the road
- Help with navigation and negotiation through places like car parks
- Possibly indicate the time of day through heavier peaks in traffic
- Help to determine the size and function of vehicles.

## **Who else may be affected?**

There are potentially many other groups of road users and pedestrians who depend on being able to audibly detect vehicles for the safe

navigation of their environment. Below are just a few examples of groups who benefit from being able to hear vehicles.

- **Children** – the Green Cross Code advises children to “Stop, Look and Listen!” for approaching vehicles
- **Older people** – any existing problems with safely navigating their environment (i.e. difficulties walking) could be aggravated if they are only aware of approaching quiet vehicles later than standard ICE vehicles
- **People with hearing impairments** – as quiet electric and hybrid vehicles are more difficult to audibly detect than standard vehicles
- **Cyclists** – an already vulnerable group that use the roads, which could be exacerbated if they are unable to detect approaching quiet vehicles
- **Horse riders** – Horses being ridden on the road could be spooked by near-silent vehicles approaching them
- **Road maintenance crews** – Workers may be unaware of approaching quiet vehicles when they are out working on the roads

At present, the lower levels of noise are viewed as a positive aspect to these vehicles and there is encouragement for them to become even quieter. Already, there has been opposition to campaigns highlighting the need for quiet and electric vehicles to emit sounds. The safety of vulnerable pedestrians and road users is paramount – work must continue to ensure that these vehicles do not present a hazard.

While a number of governments and international organisations have taken steps to address this issue through legislation, the moves so far have also raised cause for concern. The option to switch off the audible warnings must not be allowed for quiet electric and hybrid vehicles in the UK. The UK Government must also set appropriate minimum noise levels for these warnings, so that the vehicles can be heard.