

Emerging Technology Fact Sheet

The Blue Ribbon Panel for the Development of Advanced Alcohol Detection Technology

MADD, NHTSA, the auto industry and the Insurance Institute for Highway Safety are forming the Blue Ribbon Panel for the Development of Advanced Alcohol Detection Technology, which will focus on several key imperatives: the technology must not affect or interfere with the sober driver; it must be absolutely reliable and accurate; it should be set at .08 BAC for adult drivers not convicted of drunk driving, and the cost should be reasonable.ⁱ

The potential of emerging technology to stop drunk driving

Emerging technologies that can render vehicles inoperable by detecting drunk drivers have the potential to eliminate drunk driving fatalities in the future. In 2005, 12,945 people died in motor vehicle crashes involving a driver with a blood alcohol concentration (BAC) at or above the illegal limit.ⁱⁱ

The public supports technological advancements to stop drunk drivers

Americans overwhelmingly support advances in smart vehicle technology to prevent drivers from driving drunk by a 4 to 1 margin (58 percent to 16 percent).ⁱⁱⁱ Additionally, 57 percent of Americans would spend \$100 to have technologies that would prevent a car from operating if the driver is tired, distracted, or above the illegal alcohol limit installed in their new car and 69 percent would support the installation of these technologies if their insurance premium was reduced.^{iv}

Emerging technologies show promise for eliminating drunk driving

A variety of different technologies are showing promise in the fight to prevent the nearly 13,000 fatalities per year that occur as a result of drunk driving.^v There are four categories of technology being actively investigated for potential use in interlocks: advanced breath testing, tissue spectroscopy, transdermal perspiration testing and eye movement measurement. Each is in a different stage of research and development and offers potential advantages.

- **Advanced breath testing technology**

Researchers are investigating methods to make breath test interlocks easier to use. One company has developed a prototype hand-held breath test unit, about the size of a cigarette package, using solid-state instead of fuel cell technology to measure breath alcohol.^{vi} The breath test unit is integrated into the remote key system that unlocks the car. To start the car, the driver presses a button on the breath test unit and blows into it. If the driver's BAC is lower than the pre-set level, the unit automatically sends a signal that unlocks the car's ignition and the driver can start the car. If the driver's BAC is above the allowable level, the car will not start.

- **Tissue spectroscopy**

Tissue spectroscopy uses infrared light to measure alcohol levels in the tissue just beneath the skin. While this technology has not yet been developed for use by drivers, in two methods currently being studied, a person places a forearm or a finger on a sensor pad.^{vii} The sensors are sufficiently accurate, so that they can detect both a person's identity and the levels of certain chemicals in the body, such as alcohol. This method of testing is both quicker and easier than breath testing, as it requires a person only to touch a sensor.^{viii} If very small devices could be developed, they could be placed in the steering wheel where they could monitor driver alcohol continually and unobtrusively.

- **Trandermal technology**

If alcohol is present in the body, it can be detected in perspiration and used to estimate BAC. A device currently in use, SCRAM (Secure Continuous Alcohol Monitor), is strapped to the user's ankle. It has a wireless link to a modem that relays data to the agency that is monitoring the user. Technology currently in development can produce a device that is small enough to be worn on the wrist or even embedded in a vehicle's steering wheel.^{ix} There are concerns with this technology as it is not as accurate as other technologies in determining BAC, and alcohol does not appear in perspiration until at least 30 minutes after drinking.

- **Ocular measurement technology**

Alcohol and certain other drugs may affect a person's ability to track moving objects and may cause nystagmus (a distinct jerkiness of the eye). By measuring eye movements, ocular technology is a reliable indicator of alcohol or other drug impairment. In-vehicle cameras can be used to record and analyze a driver's eye movements, including their percent of eye closure (PERCLOS), tunnel vision and frequent or extended glances away from the road. While this technology is passive and non-invasive, eye movement technology alone is unlikely to be sufficient in quantifying impairment but might be used in combination with other technologies.^x

Bringing emerging technologies to market

In order to deliver these emerging technologies to the public, the Panel must coordinate a non-regulatory, voluntary, and data driven effort. This involves surveying the potential market to refine product requirements, developing one or more concept devices, building and testing prototypes, integrating a successful prototype with other vehicle system, testing an integrated system in the field and finally developing production and marketing capacity. Like The Blue Ribbon Panel on Advanced Airbag Evaluation and The Side Airbag Out of Position Injury Technical Working Group, the Blue Ribbon Panel for the Development of Advanced Alcohol Detection Technology aims to follow these steps to develop a successful and effective technology that will ultimately eliminate drunk driving.^{xi}

Future technology will eliminate drunk driving for good. MADD also supports the development of advanced technology that will stop a drunk driver from operating a vehicle. This research is being led by the Automotive Coalition for Traffic Safety through a 5-year cooperative research agreement with the National Highway Transportation Safety Administration. There are several advanced technologies currently under development including:

- using infrared light to measure BAC through the skin;
- transdermal technology that measures BAC in a person's sweat through skin contact with vehicle surfaces such as the steering wheel;
- advanced, non-intrusive measurements of driver breath alcohol.

To be effective and accepted by the public, implementation of advanced technologies must not affect or interfere with the sober driver; must be absolutely reliable and accurate; must be set at .08 BAC for adult drivers not convicted of drunk driving, and must be cost effective. MADD envisions that this technology will be made available to the public on a voluntary basis and will include insurance premium discounts.

ⁱ MADD, *International Technology Symposium: a Nation without Drunk Driving Summary Report*, November, 2006: pg 8.

ⁱⁱ Lund, Adrian K. "Eliminating Alcohol Impaired Driving: Potential Effects of Technology Applied to the General Population." Presentation at the *MADD International Technology Symposium*: June 19-20, 2006.

ⁱⁱⁱ McInturff, Bill. "A Presentation of key findings from a national survey of 800 drivers conducted June 8-11, 2006." Presentation at the *MADD International Technology Symposium*: June 19-20, 2006.

^{iv} Ibid.

^v MADD, "Mission Statement for the Blue Ribbon Panel for the Development of Advanced Alcohol Detection Technology." June, 2006.

^{vi} Ibid, pg 7.

^{vii} Ibid, pg 7.

^{viii} Ibid, pg 7.

^{ix} Ibid, pp 7-8.

^x Ibid, pg 8.

^{xi} Ibid, pg 11.