

## **Akers' Alcohol Detectors Validation Report**

Various independent agencies have conducted validation studies that examined the BreathScan<sup>®</sup> device's accuracy and suitability as a preliminary screening device when used to determine probable cause for more extensive testing. The following is a survey of their findings.

### **W.R. Grace & Company**

Fortune 500 company, W.R. Grace & Company conducted testing at their Davison Chemical Division and produced results that concurred with DOT findings. They found that small beds of the chemical agent in BreathScan<sup>®</sup> accurately distinguish between alcohol concentrations representing BAC levels of .00%, .05% and .10%. In their testing simulation, Grace used a Draeger Mark IIA Alcohol Breath Simulator. The simulator passes air through a constant temperature bubbler containing a predetermined concentration of alcohol and water. The alcohol laden air is then passed through the BreathScan<sup>®</sup> device for ten seconds, disconnected and allowed to sit for two minutes before evaluation. At .00% BAC, all the crystals retained their yellow coloration. As low as .02% BAC, some discoloration of crystals from yellow to blue-green occurred. At .06% BAC, substantial color change occurred to the entire sample, with yellow residue. At .08% BAC, there was less yellow remaining and at .10% BAC almost all the original yellow coloration had disappeared. Grace tested samples of the testing agent packed in both glass tubes and in BreathScan<sup>®</sup>'s patented glass ampoules with similar results except that the color change produced in the glass ampoules appeared to be slightly less intensive. They also noted a slight concentration of colored crystals near the intake end of the ampoule.

### **Colorado Department of Health**

The Colorado Department of Health's Alcohol Test Program tested the BreathScan<sup>®</sup> device to determine its suitability for use by law enforcement personnel in traffic stops. They noted that the unique packaging provided by the BreathScan<sup>®</sup> ampoule effectively prohibits the contamination of the crystals until the device is ready to be used. They also noted that the BreathScan<sup>®</sup> alcohol tester was suitable for screening only, and should be backed up by confirmation testing of bodily fluids. Colorado's testing is significant in that it was conducted on live subjects for the .00% BAC benchmark. A SmithWesson Mark IIA breath alcohol simulator was used to test alcohol concentrations. Testing was conducted at 34-degree centigrade, as in the previous two tests, and results were checked using gas chromatography. Testing was conducted at .85% BAC and .108% BAC. At both levels significant discoloration of the crystals occurred, enough to indicate that a subject's BAC was in the impaired range and they found BreathScan<sup>®</sup> to be suitable for use as screening device prior to further testing. In fact, the chief of the testing program noted that BreathScan<sup>®</sup> was one of the better products they had evaluated and was well suited for the market it is intended to serve.

### **Denver Police Department**

Field studies of BreathScan<sup>®</sup> were conducted by the Denver, Co. Police Department. Officers used BreathScan<sup>®</sup> at traffic stops as a screening for drunk drivers and found a 98% accuracy correlation. Of 200 tests of truck drivers, only four BreathScan<sup>®</sup> tests were inconclusive. The Department considered this an excellent rate of accuracy for a portable testing device.

### [Barbara Davis Center for Childhood Diabetes](#)

Of concern to medical professionals is the possibility that physiological conditions not related to alcohol use might affect the test, particularly when testing diabetics. Diabetics produce breath ketones, but when tested on the largest degree of ketonemia on severely ill patients when admitted to intensive care, at no time did the ketones discolor the BreathScan<sup>®</sup> crystals. The testing at the Davis Center rules out the chance of a false positive for acetone or ketones when checking for breath alcohol.

The Barbara Davis Center for Childhood Diabetes tested the BreathScan<sup>®</sup> testers to see if it were possible for diabetics (who may have large amounts of acetone or ketones on their breath) to be mistaken for alcohol abusers. The Center found that the BreathScan<sup>®</sup> testers were unable to create a false positive. The BreathScan<sup>®</sup> tester will not misidentify a diabetic as being under the influence of alcohol.

### [Drug Control and Teaching Center, King's College, London](#)

Results of the King's College study, conducted on .08% BAC testers, support manufacturers' claims that BreathScan<sup>®</sup> devices are capable of accurately detecting breath alcohol concentrations at .08% BAC.

In a recent study, using a test protocol similar to the one developed by Dr. David Cowan of King's College, London, an independent laboratory measured the effectiveness and reproducibility of the indicator color change at claimed alcohol concentration levels. Their evaluation conclusion supported the claim that BreathScan<sup>®</sup> testers are capable of detecting breath alcohol concentrations of .02%, .04%, .08% and .10%.