Evaluation Evidential Breath-Alcohol Analyzer for Mobile Use in Police Cars

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Dräger Alcotest 7110 MK III-Finland was approved for testing breath alcohol to measure alcohol (ethanol) levels for legal purposes in 1998. Since then, it has been used under stable environmental conditions at police stations. Portable evidential breath-alcohol analyzer makes it possible to measure breath-alcohol level on the place of arrest at the roadside without any unnecessary delay. Transport of suspects from the roadside to the police station or hospital requires considerable police time and resources. Particularly in Northern Finland, the distance to nearest police station or hospital can be long. The aim of the study was to assure that there was an agreement of results between breath-alcohol analyzer in mobile use at a police car and in police station.

Hundred and twenty-seven healthy volunteer suspect drunken drivers gave two parallel breath samples to both analyzers (police station and police car) complying with the same accepted protocol. In addition, 35 healthy volunteer police officers consumed an amount of alcohol (0.3 and 1.3 g/Kg) and breath measures were carried out within 7 hours. One to nine breath measures to both analyzers were randomly carried out in the police group. The age of volunteers (suspect drunken drivers and police officers) varied between 19 and 69 years. The study was carried out at two different cities (Helsinki and Jyväskylä), since various outdoor climate conditions were needed. Environmental conditions (humidity and temperature) were collected inside the car by Rotronic hygrolog - data collection device. During the study period the temperature inside the car varied between 6 and 34.7°C (mean value 20.4°C) and relative humidity varied between 7.4 and 70.4% (mean value 37.6%). Statistical analyses were carried out using linear modeling and statistics with R.

No systematic difference was observed between alcohol values in the car and police station. Statistically significant difference, however, was found between the first and second breath alcohol measures regardless of the place of breath analyzer. But when using average elimination rate of alcohol (0.13% per hour) to correct the difference in time between the first and second measures, the observed difference disappeared.

It can be concluded that there were no differences in the results of evidential breath analyzers in mobile use at a police car and in police station under environmental conditions studied. Thus, the results of evidential breath analyzer in mobile use at police car are competent and, therefore, suitable for use in legal purposes.

Keywords: Ethanol, Breath, Validation