Submitted by Michael P. Stypa, Forensic Laboratory Supervisor, Las Vegas Metropolitan Police Department, on January 21, 2020

- 1) Recommended lower limit for THC impairment in serum
 - a. Ramaekers JG, Moeller MR, van Ruitenbeek P, Theunissen EL, Schneider E, Kauert G. Cognition and motor control as a function of delta-9-THC concentration in serum and oral fluid: limits of impairment. Drug and Alcohol Dependence 2006;85:114-22.
 - i. Website link: https://www.sciencedirect.com/science/article/abs/pii/S0376871606001372
- 2) Blood to serum ratio reference
 - a. Karschner EL, Schwilke EW, Lowe RH, Darwin WD, Pope HG, Herning R, Cadet JL, Huestis MA. Do delta-9-tetrahydrocannabinol concentrations indicate recent use in chronic cannabis users? Addiction 2009; 104(12):2041-8.
 - i. Website link: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2784185/
- 3) Marijuana fact sheets
 - a. National Highway Traffic Safety Administration 2014. Drugs and human performance fact sheets. U.S. Department of Transportation.
 - i. Website link: https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/809725-drugshumanperformfs.pdf
- 4) Impaired driving testing recommendations (including marijuana)
 - Logan BK, D'Orazio AL, Mohr AL, Limoges JF, Miles AK, Scarneo CE, Kerrigan S, Liddicoat LJ, Scott KS, Huestis MA, Recommendations for toxicological investigation of drug-impaired driving and motor vehicle fatalities – 2017 update. Journal of Analytical Toxicology 2018;42:63-8.
 - i. Website link: https://academic.oup.com/jat/article/42/2/63/4653729
 - b. Logan BK, Lowrie KJ, Turri JL, Yeakel JK, Limoges JF, Miles AK, Scarneo CE, Kerrigan S, Farrell LJ. Recommendations for toxicological investigation of drug-impaired driving and motor vehicle fatalities. Journal of Analytical Toxicology 2013;37:552-8.
 - i. Website link: https://academic.oup.com/jat/article/37/8/552/776404
 - c. Farrell LJ, Kerrigan S, Logan BK. Recommendations for toxicological investigation of drug impaired driving. Journal of Forensic Science 2007; 52(5):1214-8.
 - i. Website link: https://onlinelibrary.wiley.com/doi/10.1111/j.1556-4029.2007.00516.x
- 5) ANSI/ASB Documents Toxicology
 - a. Testimony Best Practice Recommendation
 - American National Standards Institute (ANSI) / American Academy of Forensic Sciences (AAFS) Standards Board (ASB) (2019) Guidelines for opinions and testimony in forensic toxicology Document ANSI/ASB Best Practice Recommendation 037. AAFS Standards Board: Colorado Springs, CO. First Edition.
 - Website link: http://www.asbstandardsboard.org/wp-content/uploads/2019/01/037 BPR e1.pdf
 - b. Proposed Testing Standard for Impaired Driving Investigations
 - i. American National Standards Institute (ANSI) / American Academy of Forensic Sciences (AAFS) Standards Board (ASB) (Proposed 2020) Standard for the analytical scope and sensitivity of forensic toxicology testing in impaired driving investigations. Proposed Document ANSI/ASB Standard 120. AAFS Standards Board: Colorado Springs, CO. First Edition.
 - 1. This document has undergone one public comment period. After comment adjudication is complete, there will likely be a second public period during the first half of the 2020 calendar year.
 - 2. General ASB information: http://www.asbstandardsboard.org/