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### **K44 Synthetic Cannabinoids in Drivers: Clinical and Psychophysical Indications of Intoxication**

*Kayla M. Neuman, MS\*, Wisconsin State Laboratory of Hygiene, 2601 Agriculture Drive, PO Box 7996, Madison, WI 53707-7996*

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After attending this presentation, attendees will better understand how synthetic cannabinoids impairment presents in motor vehicle drivers based on Drug Recognition Expert (DRE) evaluations.

This presentation will impact the forensic science community by providing insight into the impairing effects synthetic cannabinoids have on motor vehicle drivers based on Wisconsin Operating While Intoxicated (OWI) casework in addition to how these drugs are being identified in the field by DREs.

Synthetic cannabinoids are increasing in popularity among motor vehicle drivers in Wisconsin; however, there is little known about the clinical and psychophysical effects of these substances. In cooperation with the Wisconsin Bureau of Transportation Safety (BOTS), the Wisconsin State Laboratory of Hygiene sent select whole blood samples to one of two private laboratories for synthetic cannabinoids testing based on information provided by law enforcement agencies. This casework took into account a total of 118 cases from March 2010 to May 2015 in which synthetic cannabinoids use was suspected.

Sixty of the 118 cases (51%) were positive for one or more synthetic cannabinoids and of those, 24 cases (40%) had a DRE evaluation completed with no other drugs detected. These 24 cases, consisting of 20 males (83%) and 4 females (17%), were used to examine the clinical and psychophysical indicators of synthetic cannabinoids impairment based on the information collected during the DRE evaluations. There were a total of 11 different synthetic cannabinoid compounds detected in these 24 specimens, including JWH-018, JWH-019, JWH-022, JWH-122, JWH-210, JWH-250, RCS-4, AM-2201, XLR-11, AB-PINACA, and AB-CHMINACA. The majority of psychophysical and clinical symptoms observed were consistent with the cannabis category of impairment; in keeping with these observations, the primary drug category opined by 83% of DREs was cannabis. Subjects consistently had bloodshot eyes (67%) with droopy eyelids (54%) and a lack of convergence present (75%), as well as impaired balance (54%) and coordination (71%). Horizontal gaze nystagmus was not present in 71% of the subjects and 42% displayed pupil rebound dilation. Other notable impairments were 71% of the subjects exhibited slow speech, 92% swayed from one to six inches during the modified Romberg test, and 75% swayed while balancing during the one-leg stand test. While several psychophysical impairments were exhibited, the majority of the clinical indicators displayed by the subjects were within normal ranges, including pulse rate (54%), blood pressure (63%), body temperature (88%), pupil size (54%), pupil reaction to light (67%), and muscle tone (63%). Initial contact with subjects was primarily due to poor driving and traffic crashes (71%), while 21% were contacted due to an equipment malfunction.

Overall, driver performance on DRE evaluations indicated that synthetic cannabinoids caused significant psychophysical impairment, while most clinical symptoms commonly presented within normal limits. This new data may be used to better enable DRE officers to identify the psychophysical impairment indicative of synthetic cannabinoids use.

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#### **Synthetic Cannabinoid, Impairment, DRE**