K28 Driving Under the Influence (DUI) in Southern Ohio — Drug Demographics for the Drugs Encountered in DUI Case Work

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After attending this presentation, attendees will become aware of the drug demographics seen in DUI cases analyzed in a regional crime laboratory in Ohio. The region covers a radius of approximately 75 miles around the city of Dayton. This presentation will be an overview of the most commonly encountered drugs in DUI cases analyzed at the MVRCL. Drugs that were encountered in 817 DUI cases during 2005 will be reviewed. Case examples will be used and quantitative values in blood will be listed when available.

This presentation will impact the forensic community and/or humanity by making data available as to commonly encountered drugs in a specific region of Ohio to be used by other labs analyzing DUI cases in making changes to screening protocol or changes to the testing approach used in detecting these drugs. Finally, the top thirteen drug classes will be reviewed in detail as well as mention made of Ohio's new per se law outlining per se levels for marijuana, marijuana metabolite, cocaine, cocaine metabolite, heroin, 6-monoacetylmorphine, amphetamine, methamphetamine, lysergic acid diethyl amide, and phencyclidine in blood, serum plasma and urine Mention will also be made as to how the drugs chosen in this law may bias some laboratories' DUI protocol.

Methods: DUI cases are first subject to quantitative ethanol analysis by headspace gas chromatography. Depending upon the ethanol result and the case history, analysis may stop or continue for drug analysis. Analysis proceeds with enzyme linked immunosorbent assays (ELISA) for the following drugs or drug classes with cut-offs in blood and urine listed (ng/mL): amphetamine (50), barbiturates (500), benzodiazepines (10),
cannabinoids (20), carisoprodol (1000), cocaine metabolite (100), methamphetamine (50), and opiates (25). Any positive ELISA results are subject to confirmation by gas chromatography with mass spectral, flame ionization, nitrogen phosphorus, or electron capture detection. If there are no positive ELISA screens, the case may be subject to a variety of analyses depending upon the amount of specimen submitted and the case history. These analyses can include, but are not limited to: benzodiazepines by gas chromatography with electron capture detection, basic, acidic and neutral drug screens by gas chromatography mass spectrometry (GC/MS), GHB and 4-methyl GHB by GC/MS, sympathomimetics by GC/MS, gabapentin and baclofen by high performance liquid chromatography with diode array detection, and additional ELISA screens for fentanyl (1), phencyclidine (5), and oxycodone (25).

Results: The most commonly encountered drugs (occurrence of 10 or greater) are listed by class in the table below. The drugs are listed as the number of occurrences because many cases involved multiple drug/ethanol findings. The results are further broken down by occurrences of each drug individually. Opiate occurrences were hydrocodone 67, oxycodone 59, morphine 49, codeine 28, and hydromorphone 4. Benzodiazepine occurrences were alprazolam 110, clonazepam/7-aminoclonazepam 33, diazepam/nordiazepam 29, temazepam 9, oxazepam 5, lorazepam 4, midazolam 2, and triazolam 1. Antihistamine occurrences were promethazine 7, dextromethorphan 7, chlorpheniramine 4, diphenhydramine 4, orphenadrine 3 and, doxylamine 3. Analgesic occurrences were: propoxyphene/norpropoxyphene 7, gabapentin 6, fentanyl 4, tramadol 4, trazodone 2, and meperidine 1. Antidepressant occurrences were amitriptyline/nortriptyline 4, citalopram 4, fluoxetine 4, sertraline 3, bupropion 3, and venlafaxine 3. Barbiturate occurrences were butalbital 11. Others drug classes that were confirmed included: hypnotics - zolpidem 8; sympathomimetics – methylenedioxymethamphetamine/ methylenedioxyamphetamine 2, and phentermine 1; muscle relaxants – cyclobenzaprine 3, metaxalone 1, and methocarbamol 1; antipsychotics – mirtazapine 1; anticonvulsants – phenytoin 2, and topiramate 1.

	Drug Class	Number of Occurrences
1	Ethanol	446
2	Cannabinoids	230
3	Opiates	201
4	Benzodiazepines	158
5	Cocaine	111
6	Pseudoephedrine/Ephedrine	53
7	Carisoprodol/Meprobamate	29
8	Antihistamines	28
9	Methadone	24
10	Analgesics other than opiates	24
11	Antidepressants	21
12	Amphetamine/Methamphetamine	21
13	Barbiturates	11

Summary: The data show that a great majority of the drugs responsible for DUI cases in Ohio are not necessarily illicit drugs. With the exception of ethanol, law enforcement and legislators continue to

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focus their efforts on illicit drugs as far as improved legislation and control. The new Ohio per se law is a perfect example of this mindset. This law defines per se levels for amphetamine, cocaine, cocaine metabolite, heroin, 6-monoacetylmorphine, lysergic acid diethylamide (LSD), marijuana, marijuana metabolite, methamphetamine, and phencyclidine (PCP) in blood, serum, plasma, and urine. As reflected in the data above, only the cocaine and metabolite and the marijuana and metabolite play a significant role in DUI. For 2005, MVRCL had no positive PCP cases, no driving histories consistent with LSD use, and few amphetamine/methamphetamine positives compared to the benzodiazepine and opiate classes. Intact heroin is never detected in an ante-mortem biological specimen. A per se level for any drug in urine is not meaningful as far as supporting a direct relationship between the drug and the impaired driving at the time of the offense. Ohio does not utilize the drug recognition expert program. Therefore, based on the law, urine per se levels can legally stand on their own, independent of field sobriety tests or any other measurement of impairment. Although the committee that drafted this legislation had ample consultation with toxicologists from all over the state, the toxicologists' recommendations were largely ignored. Because of the new Ohio law and others like it, some laboratories may be tempted to concentrate on those drugs with per se levels and ignore the rest. As demonstrated by the data, adopting this practice would potentially miss a majority of the drugs responsible for altered driving in DUI cases.

DUI, Drug Per Se Level, Demographics

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