



K48 Toxicological Findings and Demographics of Phencyclidine (PCP) Use in Houston From 2013 to 2018

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Learning Overview: After attending this presentation, attendees will have learned about the prevalence, blood toxicological profile, and demographic distributions of PCP-positive Houstonian drivers involved in a traffic accident or suspected of impaired driving. Attendees will also learn about common signs and symptoms observed during Drug Recognition Expert (DRE) evaluation.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by providing valuable regional information to better understand the demographic patterns of PCP-impaired or suspected impaired drivers in Houston, TX, over six years. The long-term objective is to help design and implement regulations and prevention systems that will lead to a reduction in PCP-impaired driving.

The first reported illicit use of PCP occurred in San Francisco, CA, in the 1960s. Shortly thereafter, PCP use was found in other metropolises, including Chicago, IL, Miami, FL, New York, NY, and Philadelphia, PA. While abuse of PCP subsequently declined at the national level, it continues in Houston. In 2010, the Drug Enforcement Administration (DEA) reported the arrest of nine Houston residents and the seizure of 57 gallons of PCP, the largest PCP seizure in DEA history.

This research evaluates PCP-positive cases of driving while intoxicated or driving under the influence of drugs, occurring from 2013 to 2018. The blood samples were collected from drivers and submitted by the Houston Police Department (HPD). They were then analyzed for alcohol and drugs by the HPD Crime Laboratory, Reference Laboratories, or Houston Forensic Science Center (HFSC). Toxicological findings and demographic information, including age, sex, and race/ethnicity, were evaluated for the impaired driving cases that tested positive for PCP in blood. Additionally, the Drug Influence Evaluation findings completed by DRE officers for selected cases in 2018 were examined when the officers deemed the individuals to be under the influence of a dissociative anesthetic. IBM® SPSS Statistics version 24 and Microsoft® Excel® 2016 were used for statistical evaluation.

A total of 610 Driving While Intoxicated (DWI) cases positive for PCP in blood were identified in which the traffic offense occurred between August 2013 and December 2018; they represented approximately 16% of all DWI cases from 2013 to 2018 (estimated $n=3,929$). The mean (median, range) PCP concentration was 47 (43, 7-180) ng/mL. Twenty-two percent of those cases were female and 78% were male; 85% were Black, 10% were White, and 5% were other races/ethnicities as identified by the arresting officer. No significant differences in median and distribution of PCP concentrations ($P's > 0.05$) were observed between females (median 43ng/mL) and males (43ng/mL); among Blacks (44ng/mL), Whites (39ng/mL), and others (37ng/mL); and among offense years, 2013–2018 (36-58ng/mL). Forty three percent of the cases were positive for PCP only. Among the remaining 57% in which one or more other drugs/metabolites were identified, cannabinoids were the most frequently detected analytes (35%), followed by ethanol (13%) and cocaine/metabolite (13%). When the study population was examined by age (≤ 30 , 31–40, and ≥ 41 years), the proportions of male and Black PCP-positive drivers decreased with younger age groups. For 12 cases from 2018, signs and symptoms of PCP-positive drivers observed by DRE officers were examined. Common indications included slurred speech, chemical breath odor, watery and/or bloodshot eyes, vertical/horizontal gaze nystagmus, impaired coordination/balance, and impaired divided attention.

Median PCP concentrations among demographic cohorts were remarkably similar, which indicates a possible concentration range desired by PCP users. The PCP concentration range found in the present study were comparable to other reports (7–240ng/mL), albeit the mean value in the present study was slightly lower.¹⁻³ The number of PCP-positive DWI cases has been rising in Houston in recent years (166% increase from 2016 to 2018), making risk assessment of PCP-impaired driving for evaluation efforts increasingly important.

Reference(s):

1. Kunsman et al. Phencyclidine blood concentrations in DRE cases. *J Anal Toxicol* 1997;21:498-502.
2. Mozayani. Phencyclidine—Effects on human performance and behavior. *Forensic Sci Rev* 2003;15:62-74.
3. Jones et al. *Long-term phencyclidine (PCP) usage trends in the District of Columbia*. The Society of Forensic Toxicologists 2018 Annual Meeting.

PCP, Toxicology, Blood