K52 Long-Term Phencyclidine (PCP) Usage Trends in the District of Columbia

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Learning Overview: After attending this presentation, attendees will understand: (1) PCP use specific to the District of Columbia population based on a retroactive study observing poly-drug use and sample concentrations, and (2) the effects of PCP based on a review of published literature.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by serving as a statistical resource on how the longstanding use of PCP has historically affected the community. Nationally, PCP is not a common drug of abuse and is often overlooked in trend reports. However, it is among one of the most prevalent illicit drugs abused specific to the District of Columbia.

PCP was developed in the 1950s as an intravenous anesthetic for both human and veterinarian use. It is known illicitly under a variety of names such as Angel Dust; is found in many forms, such as powder, crystal, tablet, and liquid; and can be injected, snorted, ingested, or smoked. PCP is a non-competitive antagonist for N-Methyl-D-aspartic (NMDA) receptor resulting in the high variance in effects observed in users. PCP's continuous resurgence in the community is possibly a result of a phenomenon called "generational forgetting" in which there was a continuous flow of new drugs onto the scene and older ones being rediscovered and reinvented by younger generations, such as combining phencyclidine with marijuana.

A retrospective study on Driving Under the Influence (DUI) and postmortem cases at the District of Columbia Office of the Chief Medical Examiner (OCME) were conducted to demonstrate and draw conclusions regarding trends. This study reviewed 145 postmortem cases from 2003 to 2017 in which PCP was listed in the cause of death, and 868 DUI cases from 2010 to 2017 in which PCP was present. Data was generated based on key components of the cases, such as poly-drug use and sample concentrations. Statistics were analyzed to determine correlation in specimen source, antemortem and postmortem concentrations, and any increasing or decreasing trends over the years.

The number of postmortem cases in which PCP was listed increased from 2003 to 2017 by a factor of ten. Manner of death in the 145 PCP postmortem cases were mostly accidental with only five homicides, three of which were while in police custody. The most common drugs, in order of prevalence, used with PCP in postmortem poly-drug cases were cocaine, ethanol, and heroin. The number of DUI cases in which PCP was present increased from 2010 to 2017 by 14%. The most common drugs, in order of prevalence, used with PCP in DUI poly-drug cases were marijuana, benzoylecgonine, and codeine. There was no correlation between femoral, heart, or hospital blood PCP concentrations for postmortem or antemortem cases. Table 1 compares the findings within the District of Columbia population to that of established literature:

	Postmortem Blood	**Antemortem Blood (DUI)**
Reference[1] Average	1.1mg/L	0.075mg/L
Reference[1] Range	0.5-3.3mg/L	0.007-0.240mg/L
In-house Average	0.072mg/L	0.023mg/L
In-house Range	0.01-0.37mg/L	0.01-0.15mg/L

Table 1: Phencyclidine Concentrations in Postmortem and Antemortem Blood

Over the past 15 years, the District of Columbia has seen an increase in PCP postmortem cases, possibly due to a policy change that increased reporting and decreased inconsistencies with listing specific drugs in case reports. Generally, over the past seven years, PCP prevalence in DUI casework has increased. Regionally, our concentrations across postmortem and antemortem populations tend to be lower than what is suggested in literature sources surveying other areas. When analyzing OCME casework from 2003 to 2017, data demonstrates that accident cases are most likely the cause of death associated with most PCP-related postmortem cases. However, there is no correlation in blood concentration of PCP use and the manner of death. At higher doses of PCP, users tend to be more aggressive and display increased strength, which possibly explains homicide cases accounting for the second most common cause of death associated with PCP intoxication due to restraints in police custody.

Reference(s):

1. Baselt, Randall C. *Disposition of Toxic Drugs and Chemicals in Man*. 11th edition. 2017.

Phencyclidine, Retroactive Study, District of Columbia