



Medical Toxicology

September 28, 2017

Acting Chair Pryor  
United States Sentencing Commission  
One Columbus Circle, NE, Suite 2-500  
Washington, DC 20002  
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Dear Acting Chair Pryor,

We want to thank the United States Sentencing Commission for giving us the opportunity to speak about our experience with the synthetic cathinones at the University of Virginia. We are both physicians dually boarded in both Emergency Medicine and Medical Toxicology. We clinically care for patients at the University of Virginia Health System. We practice in the emergency department where we care for both acute and chronic intoxications from various substances. As clinical toxicologists, we also care for all poisoned patients presenting to our health system, many of them critically ill, and provide medical directorship for the Blue Ridge Poison Center which covers a population of ~3 million and 48 health care facilities in Virginia.

The synthetic cathinones initially entered the market as products called "bath salts". These products have been sold under a variety of unassuming brand names, such as Ivory Wave, Ocean Burst, TranQuility, Vanilla Sky, and White Lightning. Various products often have written warnings stating "not for human consumption" on the packages. Typical products contain a white powder that our patients abuse via inhalation, ingestion, or injection. These products were purchased through a number of venues, such as on the internet and in head shops. In addition to being sold as "bath salts", these products were also surreptitiously marketed as other substances, such as "plant food" or "fertilizer," as a means of avoiding regulatory scrutiny. The synthetic cathinones have also been substituted for other substances of abuse, such as "Molly" (also called "Ecstasy").

We clinically began to encounter high numbers of patients intoxicated with the synthetic cathinones in 2011. This was a time when these products had not been banned either by the Commonwealth of Virginia or the Federal government and our patients were more willing to admit that they had used them. The majority of patients presented to our health care facility with agitation and psychotic behavior. They were typically markedly combative, require numerous security personnel to hold them down while healthcare providers administered sedatives to calm them to avoid both self harm as well as harm to others. Personnel, including first responders and healthcare providers, were harmed by these individuals. We placed numerous patients on life support to deeply sedate them due to their marked agitation and many of these patients required prolonged hospitalization in our intensive care unit, consuming both bed space and healthcare resources. We have worked in numerous large cities (e.g., Detroit, Indianapolis, Grand Rapids, Richmond) and never have we seen such a concentrated number of patients exhibiting such agitation and combativeness like those who used the synthetic cathinones. In 2010 we had only 4 patients who admitted to using "bath salts", but in 2011 cases rapidly increased and we had 90 such cases. In order to highlight the specific problems encountered with patients using synthetic cathinones, we published one specific case in the journal *Annals of Emergency Medicine* to highlight the associated complications and the prolonged hospital stay.

There is limited available clinical information in the medical literature on synthetic cathinone effects compared to other more common drugs such as cocaine and amphetamines. Drug induced psychosis and aggression appear to be more severe than other amphetamine-like stimulants. There have been numerous reports of acute, severe, sympathomimetic toxicity manifested primarily by a constellation of psychopathological, neurological, and cardiovascular clinical features. Although rates of adverse events are unknown, surveys of prior users indicate that most users experience at least intermittent adverse effects, some of which can be severe. Studies show that the majority of cases of synthetic cathinone abuse presented with acute agitation, a hallmark of toxicity that includes combative violent behavior. Psychosis may be pronounced with patients experiencing paranoia, hallucinations, and delusions. Acute anxiety and panic attacks are reported along with destructive thoughts and behavior, including suicidality, homicidality, and self-mutilation.

Most individuals who used these substances exhibited autonomic hyperactivity on exam (e.g., rapid heart rate and high blood pressure). Potential cardiovascular effects include reports of arrhythmias, palpitations, syncope, chest pain, and myocardial infarction. Some individuals exhibit markedly elevated temperatures. Neurologically, users may present with tremors, rigidity, and seizures. Some patients reported prolonged insomnia. Use contributed to prolonged delirium with attention deficit and memory disturbance. All organ systems can be affected, with muscle breakdown, liver damage, kidney failure, and myocardial injury all being reported and experienced personally in our program. Deaths have been widely reported with synthetic cathinone use in the U.S. and Europe from both direct and indirect toxicity, such as suicide.

Overall, as practicing clinicians in Emergency Medicine and Medical Toxicology, we found that the use of synthetic cathinones placed patients at marked risk for adverse consequences. These are dangerous substances both for the users and for those who encounter the acutely intoxicated patients such as first responders and hospital personnel. We are certainly pleased that these substances have now been banned and hope that appropriate sentencing will be made for those peddling the drug to the populace, many who are unaware of the adverse consequences associated with the use of synthetic cathinones.

Sincerely,



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