NOVEL PSYCHOACTIVE SUBSTANCES: XYLAZINE

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The Legislative Analysis and Public Policy Association (LAPPA) is monitoring the emergence of novel psychoactive substances (NPS) appearing on the illicit drug market in the United States. The term "novel" does not denote a brand new, never-before-seen substance, but rather a substance that is newly available in the drug market. This fact sheet, the second in a series highlighting these dangerous drugs, is an examination of xylazine, also known by the street names "tranq," "tranq dope," or "sleep cut," a powerful veterinary sedative increasingly appearing as an adulterant in heroin and fentanyl mixtures in the U.S., particularly over the last two years.

Bayer Company developed xylazine in 1962 for use in veterinary medicine. The FDA approved its use as a sedative, analgesic, and muscle relaxant in dogs, cats, horses, elk, and deer.[1] Veterinarians also use it as an emetic (*i.e.*, to induce vomiting) in cats. Researchers studied xylazine's use in humans but terminated those tests because of the drug's severe depressant effects on blood pressure and the central nervous system. Xylazine has a chemical structure similar to compounds called phenothiazines and operates by decreasing the release of norepinephrine and dopamine in the central nervous system, resulting in analgesia, sedation, and muscle relaxation.

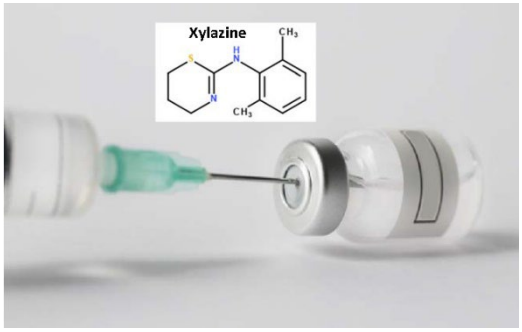
In recent years, person(s) who use drugs (PWUD) mix xylazine with other drugs, particularly heroin and fentanyl, to enhance the high of those drugs. These individuals report using these mixtures by injection, inhalation, or swallowing. A 2022 study on xylazine use in Philadelphia found that, although many PWUD enjoy the effects of fentanyl, the desired feeling does not last as long as heroin.[2] PWUD report that fentanyl cut with xylazine extends the high over a longer period of time. The link between xylazine and fentanyl is close and deadly: the xylazine study also found that, in 98 percent of xylazine-involved deaths nationwide, fentanyl was also present. Xylazine causes hypotension and dangerously depresses respiration, heart rate, and central nervous system activity. Such sedation significantly increases the risk of a fatal overdose.

Individuals who study drug use first observed the recreational use of xylazine in Puerto Rico in the early 2000s. More recently, its use is concentrated in the northeastern United States and spreading gradually westward from there. Philadelphia, Pennsylvania is a particular epicenter of recent xylazine use. Between 2010 and 2015, only two percent of unintentional heroin or fentanyl overdose deaths in Philadelphia also involved xylazine. Since then, xylazine's involvement in heroin and fentanyl overdoses increased greatly: 11 percent in 2016, 18 percent in 2018, and 31 percent in 2019. A similar increase occurred in Massachusetts. Of the drug samples tested by the Massachusetts Drug Supply Data Stream between January and June 2022, 28 percent tested positive for xylazine. While 28 percent is the statewide average; parts of western Massachusetts found xylazine in 50-75 percent of tested samples. Connecticut and Maryland likewise face increases, with xylazine present in 10 and 19 percent of fatal overdoses in 2021, respectively. A 2021 report by the Centers for Disease Control and Prevention discovered

[1] 21 C.F.R. § 522.2662 (2022).
[2] Friedman, Joseph, et al. "Xylazine spreads across the US: A growing component of the increasingly synthetic and polysubstance overdose crisis." *Drug and Alcohol Dependence*, Vol 233, Apr 1, 2022. https://www.sciencedirect.com/science/article/abs/pii/S037687162200117X?via%3Dihub.

xylazine-linked drug overdoses in 25 of the 38 states it examined. Nationwide, the prevalence of xylazine in fatal overdoses has grown from 0.36 percent in 2015 to 6.7 percent in 2020, a twenty-fold increase. The effects remain strongest in the Northeast, particularly with white males. Nearly all fatal overdoses involving xylazine involve fentanyl, with cocaine and heroin additionally present in 25 to 33 percent of cases.

Xylazine is a serious threat to human health even when not combined with other drugs. The drug's effects generally last from six to eight hours and can leave the user unconscious and helpless during that time. As a result, a PWUD experiencing xylazine sedation may end up exposed in the sun or snow or left vulnerable to compression injuries from lying in one position for hours on end. Once unconscious, a PWUD faces additional dangers such as an attack or sexual assault: some PWUD awake to find their clothes missing, with no idea how it happened. Xylazine may also contain certain bacteria and fungi. In animal subjects, these are of little concern, but in humans, whose immune system is not adapted to fighting them, the consequences can be severe. Xylazine users are prone to open skin ulcers, "scabby sores," abscesses, and necrosis of the skin and soft tissues. Some victims lose limbs. One harm reductionist describes the wounds of xylazine users as "just horror." Additionally, overdoses involving xylazine present public health challenges: because xylazine is not an opioid, the overdose reversal drug naloxone is ineffective against it. Public health officials, nevertheless, recommend administering naloxone, as xylazine typically appears alongside fentanyl or other opioids, but it does little to reverse the deep sedative effects of xylazine itself.



As of September 2022, there has been minimal change to the government regulation of xylazine throughout the U.S over the past few years. There have not been any recent efforts to reschedule xylazine as a controlled substance at the federal level. Moreover, what regulations exist at the state level generally only govern how xylazine may be used for animal euthanasia. In one exception, Florida classified xylazine as a Schedule I controlled substance by statute in 2016.[3] For now, Florida stands alone. A 2017 bill in the New York legislature would have scheduled xylazine as a controlled substance, but it only passed the state senate.[4] The fact that veterinarians currently use xylazine regularly may complicate states' abilities to schedule it as a controlled substance, particularly as to Schedule I.

Even as recent data show spikes in xylazine-involved overdoses, there is a significant possibility that the amount of involvement is underreported. Many jurisdictions do not currently test for xylazine, and not every fatal overdose is subject to a full forensic toxicology screen. The scale of xylazine use may be even larger than the data suggest. LAPPA will continue to monitor its spread and any new regulatory response at the state or federal level.

RESOURCES

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[3] FLA. STAT. ANN. § 893.03(c)(37) (West 2022).
[4] S.B. 300, 240th Leg. Sess. (N.Y. 2017).

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ABOUT LEGISLATIVE ANALYSIS AND PUBLIC POLICY ASSOCIATION

The Legislative Analysis and Public Policy Association (LAPPA) is a 501(c)(3) nonprofit organization whose mission is to conduct legal and legislative research and analysis and draft legislation on effective law and policy in the areas of public safety and health, substance use disorders, and the criminal justice system.

LAPPA produces timely model laws and policies that can be used by national, state, and local public health, public safety, and substance use disorder practitioners who want the latest comprehensive information on law and policy as well as up-to-the-minute comparative analyses, publications, educational brochures, and other tools ranging from podcasts to fact sheets. Examples of topics on which LAPPA has assisted stakeholders include law enforcement/community engagement, naloxone laws, alternatives to incarceration for those with substance use disorders, medication for addiction treatment in correctional settings, and the involuntary commitment and guardianship of individuals with alcohol or substance use disorders.

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