Drug Enforcement Administration
Diversion Control Division
Drug & Chemical Evaluation Section

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DEA/DC/DOE

N-ETHYLPENTYLONE

(Street Names: bath salts, plant fertilizer, plant food, legal high, research chemicals)

Introduction:

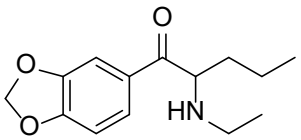
N-Ethylpentylone is a designer drug of the phenethylamine class. *N*-Ethylpentylone is structurally and pharmacologically similar to schedule I substances cathinone, methcathinone, mephedrone, methylone, pentylone, MDPV, MDMA; schedule II drug methamphetamine; and other related substances. Evidence indicates that *N*-ethylpentylone, like these schedule I and II substances, is abused for its psychoactive effects. *N*-Ethylpentylone produces stimulant-like effects similar to those of methcathinone, methamphetamine, and other schedule I and II phenethylamine substances. Abuse of *N*-ethylpentylone has resulted in emergency department visits and fatal overdoses.

Licit Uses:

N-Ethylpentylone is not approved for medical use in the United States.

Chemistry:

N-Ethylpentylone is chemically known as 1-(1,3-benzodioxol- 5-yl)-2-(ethylamino)pentan-1-one (CAS (hydrochloride salt) *17763-02-9*). *N*-Ethylpentylone has a molecular formula of $C_{14}H_{19}NO_3$. It is a phenethylamine substituted with a carbonyl group at its beta position, a propyl group at its alpha position, a 3,4-methylenedioxy ring on its phenyl ring, and an ethyl group on the nitrogen. The chemical structure of *N*-ethylpentylone is shown below:



Pharmacology:

N-Ethylpentylone, similar to schedule I synthetic cathinones (e.g., pentylone, mephedrone, methylone, and MDPV) and well-known sympathomimetic agents (e.g., cocaine, methamphetamine, and MDMA), causes stimulant-related psychological and somatic effects. The pharmacological effects of *N*-ethylpentylone on the central nervous system are like those of mephedrone, MDPV, cathinone, and methcathinone—schedule I substances with high potential for abuse.

In laboratory studies investigating the effects of drugs on monoaminergic systems, *N*-ethylpentylone inhibited the uptake of the monoamine neurotransmitters dopamine, serotonin, and norepinephrine. Administration of *N*-ethylpentylone in mice has been shown to increase locomotor activity. In drug discrimination studies, *N*-ethylpentylone fully substitutes for the discriminative stimulus effects produced by methamphetamine and cocaine. Adverse effects associated with *N*-ethylpentylone abuse include diaphoresis, insomnia, mydriasis, hyperthermia, vomiting, agitation, disorientation, paranoia, abdominal pain, cardiac arrest, respiratory failure, coma, and death.

Illicit Uses:

N-Ethylpentylone, like other synthetic cathinone substances, is perceived by users as a 'legal' alternative to drugs of abuse, such as MDMA, methamphetamine, and cocaine.

User Population:

Evidence indicates that the main users of *N*-ethylpentylone, similar to schedule I synthetic cathinones and MDMA, are youths and young adults.

Illicit Distribution:

Illicit distribution of *N*-ethylpentylone has been documented in the United States. The Drug Enforcement Administration's National Forensic Laboratory Information System Drug database collects scientifically verified data on drug items and cases submitted to and analyzed by participating federal, state, and local forensic drug laboratories. NFLIS-Drug received the first report of *N*-ethylpentylone in 2014. Reports later increased to 2,395 in 2016 and 10,268 in 2018, which have since decreased to 316 in 2020, 101 in 2022, and 70 in 2023.

Control Status:

N-Ethylpentylone is a schedule I substance under the Controlled Substances Act.

Comments and additional information are welcomed by the Drug and Chemical Evaluation Section; Fax 571-362-4250, Telephone 571-362-3249, or Email DPE@dea.gov.