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**RESEARCH
SUMMARY**

Study of syringes collected in Estonian harm reduction services for drug residues 2024

A study of syringe residues provides an answer to which psychoactive substances are used by people who inject drugs in different regions of Estonia. It is chemically objective information that helps:

- to get a good overview of the regional drug market,
- to provide input for early warning of users,
- to better plan harm reduction (including overdose prevention) and treatment activities.

Study method

To gain insight into the drugs used, the contents of **syringes used by people who inject drugs** were chemically analyzed. A liquid chromatography quadrupole mass spectrometer with a time-of-flight detector and, in some cases, a gas chromatography mass spectrometer was used for analysis. The analysis was carried out by the **Estonian Forensic Science Institute**. The syringe residue analysis method has been in use in Estonia since 2021. The chemical analysis of syringe residues has also been successfully carried out by other European cities that gather under the international **ESCAPE project** (European Syringe Collection and Analysis Project).

Sample

The sample was formed based on syringes collected in the framework of Estonian harm reduction services. A total of **417 syringes were randomly selected** and collected in May and June 2024. It was important that the syringes would be visually complete and recently used.

The numbers of participating services were following: five from Tallinn, four from Kohtla-Järve, three from Narva, three from Tartu and one from Rakvere, Jõhvi, Maardu, Kiviõli, Pärnu and Paide. From services with smaller clientele at least 15 syringes were selected and with larger ones 30 syringes.

Estonian harm reduction service in numbers*



3,764
users



91,369
visits



Services are provided in:

15 stationary centers

15 outreach units

3 pharmacies

2 mobile units

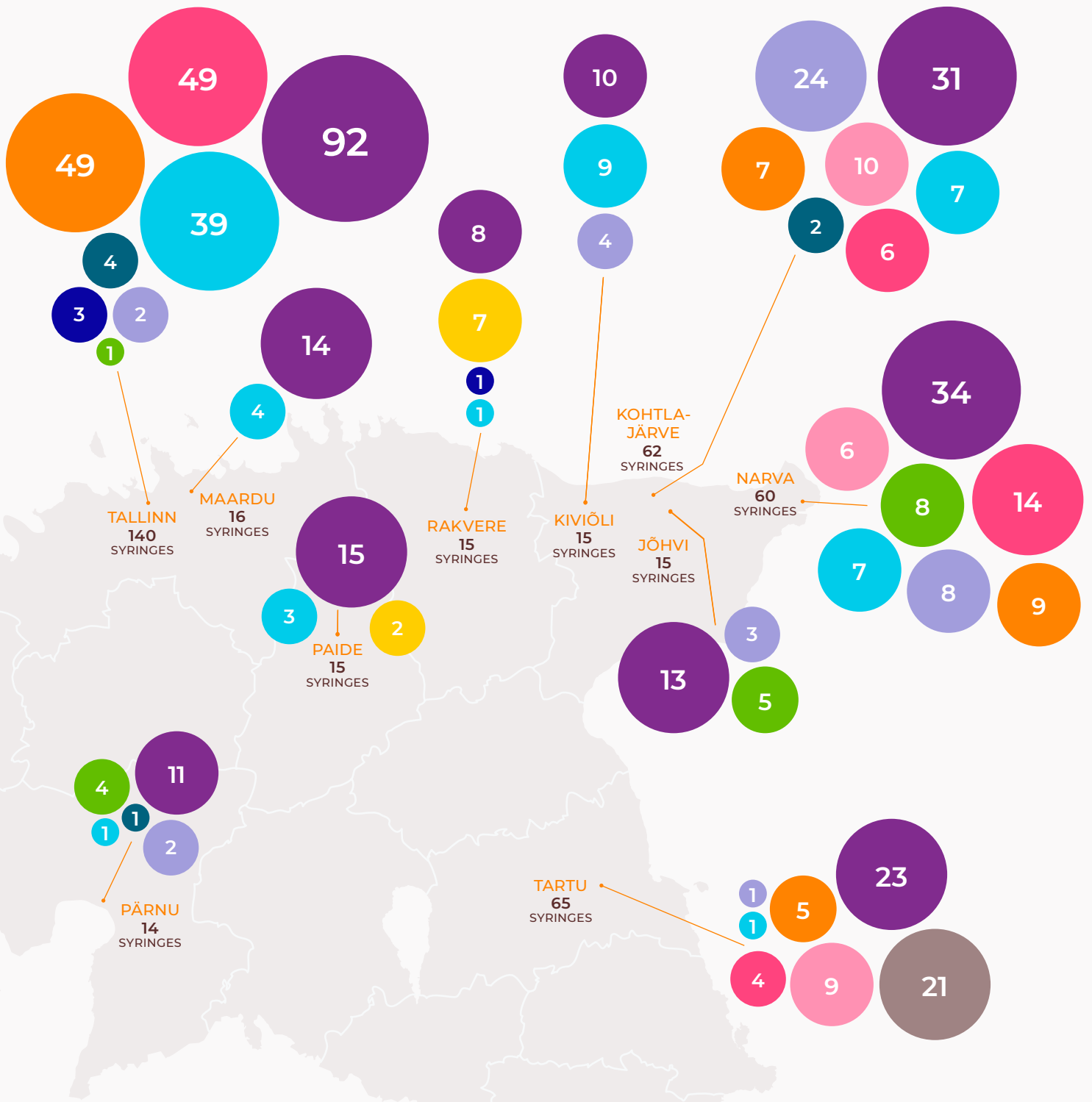


1,951,326
syringes distributed

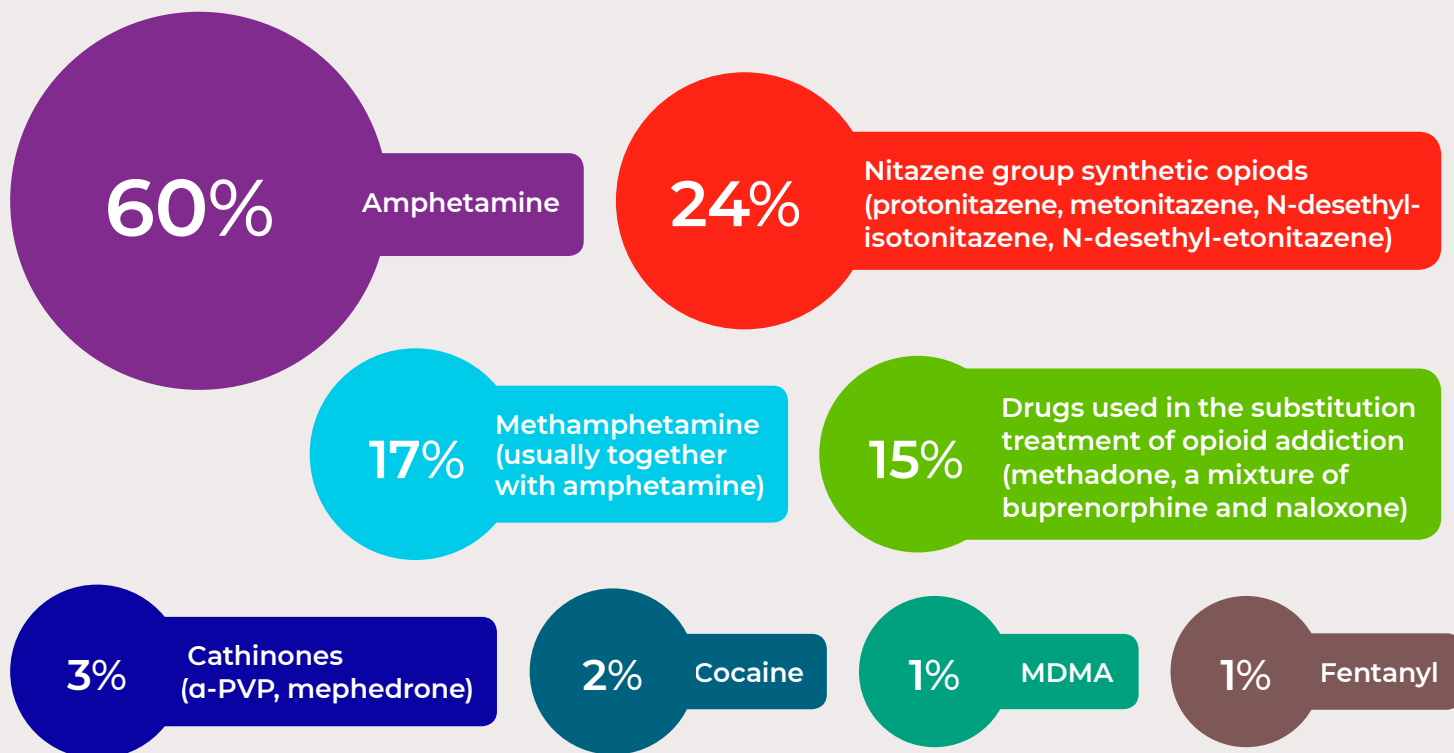
* Data presented as the end of 2024.

Most frequently detected drugs and number of syringes analyzed by region (absolute numbers)*

*Syringes can contain several psychoactive substances



The main drugs/groups of drugs used in total syringe sample (n=417)



Conclusions

- Based on the study, regional differences in injected substances can be seen, **but amphetamine continues to be the most injected drug in Estonia (60%)**.
- In 2024, over half of the syringes (52%) contained only one psychoactive substance. Compared to 2023, the proportion of syringes with one substance has decreased (72% in 2023).
- **Nitazenes remain the most common opioid detected in syringes (24%)**. In 2024, injecting nitazenes was also widespread in Narva and Tartu, in addition to Harju County and Kohtla-Järve.
- The most common nitazene in 2024 was a mixture of protonitazene and metonitazene (70% of syringes containing nitazene), followed by N-desethyl-isotonitazene (25% of syringes containing nitazene). A new nitazene, N-desethyl-etonitazene, was identified in three syringes from Maardu. Nitazenes are synthetic opioids that are extremely dangerous for the user.
- Fentanyl, including acrylfentanyl and carfentanil, was found in a small number of syringes. No heroin was found.
- Injection of cathinones (α-PVP and mephedrone) continues to be less common (10% in 2022 and 1% of syringes in 2023 and 3% in 2024). Among cathinones, mephedrone was identified as a new substance in syringes from Rakvere and Paide (n=9).
- Abuse of methadone and a mixture of buprenorphine and naloxone used in opioid substitution treatment remained at 15% in 2024. Methadone was found in 44 syringes. Out of a total of 18 syringes containing buprenorphine, 10 also contained naloxone. Injection of opioid substitution drugs is more common in Kohtla-Järve and Narva.
- The most prevalent adulterant found in syringes was caffeine (24%), which was always found together with amphetamine.
- **Medicines** were also found in syringes, but this was not a common trend. The most found medicines in syringes were methylphenidate (n=21) (Tartu), diazepam (n=9), tizanidine (n=6), oxycodone (n=5), pregabalin (n=4), pseudoephedrine (n=3) and tramadol (n=2).
- **Methylphenidate** is a central nervous system stimulant used to treat attention deficit hyperactivity disorder (ADHD) and narcolepsy in adults, adolescents, and children. Findings of methylphenidate in syringes indicate abuse of the drug.