Stadt Zürich
Soziale Einrichtungen
und Betriebe

Amphetamine

Evaluation of the substances tested at the Drug Information Center Zurich in 2025

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1 Introduction

Amphetamine is a synthetically produced stimulant that belongs to the phenethylamines.

In 2025, a total of 340 samples declared as amphetamine were handed in for analysis at the Drug Information Center (DIZ) in Zurich and during the mobile drug checkings. 306 of these samples were submitted as part of the stationary drug checking, and 34 as part of the nine mobile drug checkings.

The results published here are not representative of the entire drug market in the city of Zurich.

1.1 Risk Assessment

In addition to the known side effects and the potential for psychological dependence associated with amphetamine, the highly variable amphetamine content, synthesis impurities, toxic or other pharmacologically active extenders, and mislabeling pose health risks.

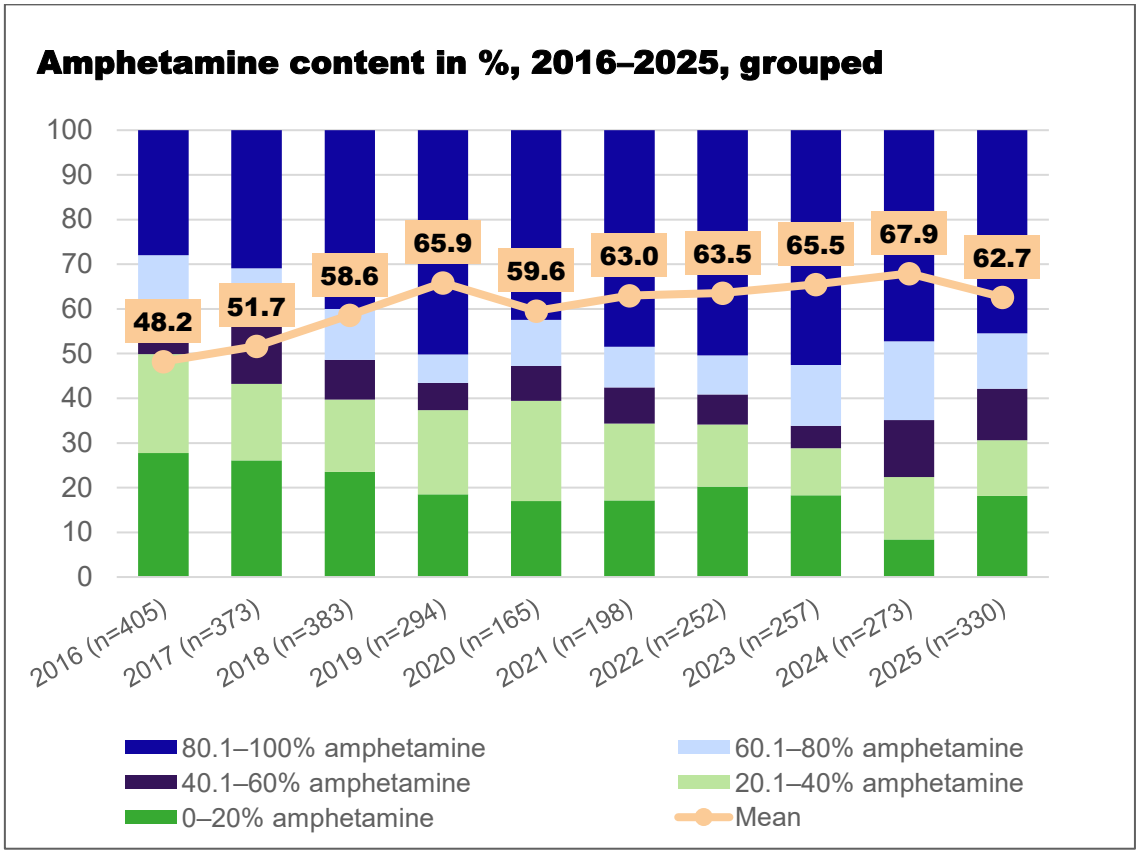
The highly variable and often high amphetamine content poses a risk of overdose upon consumption. High doses of amphetamine can lead to an increase in body temperature, hallucinations, cardiovascular failure, cerebral hemorrhages, or strokes, and even kidney and liver failure. A dose of 50 mg per night (or per use), snorted or swallowed, corresponds to the maximum recommended dose for healthy users.

The effects of consuming synthetic impurities have been scarcely studied to date and thus pose an unknown health risk. Consuming amphetamine laced with solvents (toxic substances) can damage the mucous membranes, and thus, with nasal use, cause significant long-term damage to the nasal mucosa. With other forms of consumption, such as oral ingestion, there is a risk that these substances may have toxic and harmful effects on the entire body, including the organs.

Information and recommendations for the safest possible use can be found on saferparty.ch under “Amphetamine Safer Use.”

1.2 Amphetamine content

In 2025, the average amphetamine content[1] of the samples analyzed by the DIZ[2] was 62.7%. Compared to the previous year, this content decreased by 5.2%[3] . The amphetamine content of the samples examined varied widely, ranging from 0.2% to 100%.



Graph1 : Amphetamine content in %, 2016–2025, grouped

1.3 Unexpected pharmacologically active substances

The amphetamine samples submitted were often a mixture of amphetamine and one or more extenders. Some of these extenders are not pharmacologically active (e.g., lactose, starch, cellulose). The laboratory does not report extenders that have no additional effects when consumed and are therefore not harmful to health, and these agents are not included in these statistics.

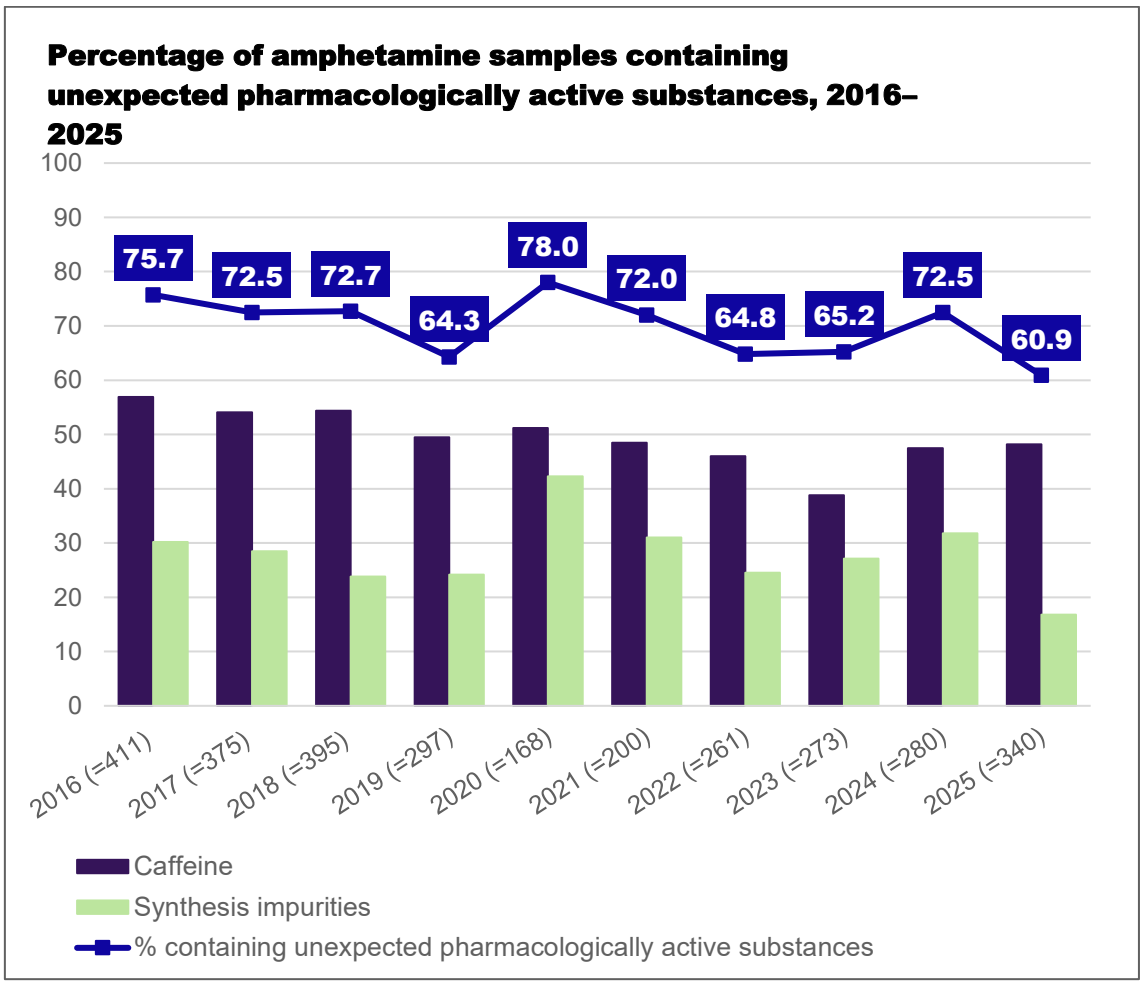
In 2025, 60.9% (-11.6%) of the submitted amphetamine samples contained at least one pharmacologically active extender, a synthetic impurity, or contamination (smear-

[1]. Amphetamine is primarily traded as sulfate, which is why all values are reported as sulfate. Sulfate is a salt form.
[2] 10 samples were not included in the calculation of the average amphetamine content: one sample yielded a qualitative amphetamine result, no controlled substance was detected in two samples, and seven samples turned out to be mislabeled. These samples would distort the picture of the average content of powdered amphetamine due to differing galenic forms, misdeclarations, or purely qualitative analyses.
[3] The differences in percentage points compared to the previous year are indicated in parentheses below.

contamination in minigrips previously used with other substances). In 2025, 16.8% (-15.0%) of all samples contained at least one synthesis impurity.

Synthesis impurities result from improper manufacturing and/or insufficient purification of the amphetamine during the manufacturing process. It is unknown whether and at what dosages synthesis impurities are active and/or harmful to health. Therefore, an additional, unknown health risk must always be assumed.

The most common pharmacologically active extender in amphetamine samples remains caffeine (48.2% of all samples; +0.7%).



Graph2 : Amphetamine samples containing unexpected pharmacologically active substances, in %, 2016–2025[4]

The following sections describe the unexpected substances detected in amphetamine samples in 2025, along with their effects and risks.

[4] The difference in the number of samples between Figure 1 and Figure 2 (n=330 and n=340) is due to the fact that in Figure 1, samples declared as amphetamine but containing no amphetamine (e.g., misdeclarations) were not included in the analysis. In Figure 2, all samples declared as amphetamine were included in the analysis.

1.3.1 Caffeine

Caffeine is a stimulant that increases heart rate, temporarily boosts mental performance, and suppresses appetite. At higher doses (starting at approximately 300 mg, equivalent to about 8 cups of coffee), it also induces euphoria. At doses of 200 mg or more, the following side effects are possible: sweating, heart palpitations, frequent urination, cardiac arrhythmia, perceptual disturbances, tremors, nervousness, and sleep disturbances. With regular use, there is a risk of dependence with physical symptoms. When combined with amphetamine, the effects of both substances are amplified. This places a greater strain on the cardiovascular system.

Caffeine is added to amphetamine due to its stimulating effect and its potential to enhance the drug's effects, but also to maximize profits by diluting the substance.

Caffeine was detected in 48.2% of all amphetamine samples in 2025 (+0.7%); on average, samples cut with caffeine contained 52.5% caffeine (+8.7%).

1.3.2 Synthesic impurities

Synthesic impurities indicate improper manufacturing, which is primarily due to the fact that the substance is produced in illegal laboratories with widely varying quality standards and levels of expertise. Since there is very little information available on the risks, side effects, and long-term consequences of the various synthetic impurities, consuming amphetamine that contains these impurities poses an unknown additional health risk. It is assumed that some of these synthetic impurities have neurotoxic and/or carcinogenic properties. Although synthetic impurities are visible during analysis, it is often impossible to determine exactly which substances are present and in what concentrations. DPIA (di(beta-phenylisopropyl)amine) and formetorex are two synthetic impurities that can be identified during laboratory analysis. DPIA has a mild stimulant effect, but this is much less pronounced than that of amphetamine. The pharmacological and toxicological properties of DPIA in humans are currently unknown due to a lack of scientific data. Based on a study in rodents, the toxicity of DPIA is described as moderate[5] . There is evidence that DPIA is partially converted into amphetamine in the body. Additionally, DPIA may have side effects affecting the cardiovascular system and blood pressure.

Formetorex is a stimulant that is half as potent as amphetamine. There is very little reliable information available regarding the risks, toxicity, side effects, and long-term consequences of these two substances.

Synthesic impurities were detected in 16.8% of the amphetamine samples analyzed in 2025 (-15.0%). On average, the samples contained approximately 6.0% synthesic impurities.[6]

[5] Pharmacological characterization of 3,4-methylenedioxyamphetamine (MDA) analogs and two amphetamine-based compounds: N,α-DEPEA and DPIA (sciencedirectassets.com)

[6] Starting in 2025, the laboratory was able to determine the estimated average content for the majority of samples with detected synthetic impurities—regardless of the number of synthetic impurities present. Overall, this was the case for 35 out of 57 samples. The content of synthetic impurities is always expressed as a percentage of the amphetamine content. Example: If a sample contains 65% amphetamine, the proportion of synthetic impurities is calculated relative to this 65%. Therefore, we cannot provide an exact figure.

Synthesic impurities were detected in 16.8% of the amphetamine samples (-15.0%). 12.9% of the amphetamine samples contained one to two different synthetic impurities (-2.1%). Three different synthetic impurities were analyzed in 1.2% of the amphetamine samples (-4.3%). In 2.6% of the amphetamine samples, as many as four to nine different synthetic impurities were analyzed (-4.0%). No synthetic impurities were detected in 83.2% of the samples.

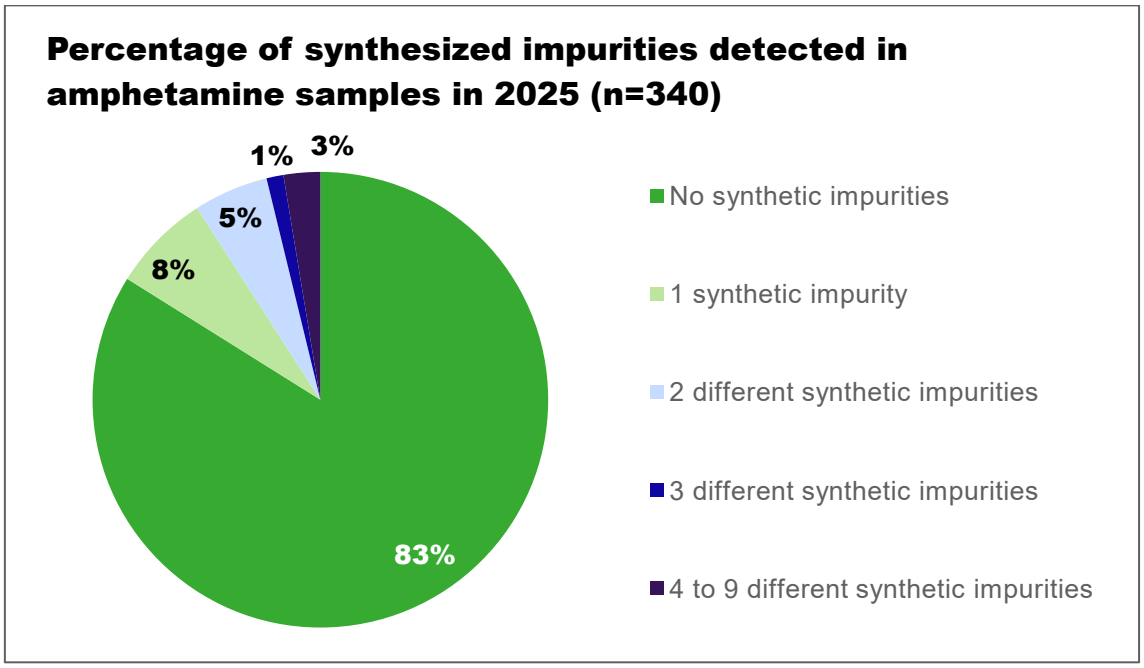


Figure3 : Proportion of synthetic impurities analyzed in amphetamine samples in 2025, in % (n=340)

Since there is very little information available on the risks, toxicity, side effects, and long-term consequences of synthetic impurities, it is not possible to make a precise statement regarding the quantity or proportion at which they become harmful to health. However, it can be assumed that a larger quantity also entails a greater risk. Nevertheless, it cannot be ruled out that even small amounts of certain synthetic impurities may be harmful to health.

1.3.3 1-PEA and 2-PEA[7]

1-PEA was detected in 3.2% of the amphetamine samples analyzed in 2025 (-1.4%).

1-PEA (1-phenylethylamine) belongs—unlike 2-PEA (2-phenethylamine)—to the benzylamines and, according to current findings, has no psychoactive effects, unlike amphetamine. However, experiments have shown that 1-phenylethylamine inhibits the conversion of norepinephrine to epinephrine. Therefore, it cannot be ruled out that 1-phenylethylamine may enhance the effects of amphetamine.

1-PEA is chemically and pharmacologically closely related to phenethylamine (PEA, or 2-PEA). It is assumed that 1-PEA itself has little to no effect on the human body even at high doses (over 600 mg), if it is taken orally or intravenously (i.v.). Consumption of 1-PEA is not recommended when taking medications with monoamine oxidase-inhibiting effects (MAO inhibitors, e.g., certain antidepressants). Doses significantly exceeding 600 mg can trigger side effects such as headaches, increased heart rate, elevated blood pressure, anxiety, and insomnia.

1-PEA can be used in the synthesis of amphetamine. Therefore, the presence of 1-PEA may indicate an impure synthesis. If it is present in higher quantities in the amphetamine sample, it can be assumed that it was added as a extender.

2-PEA was detected in 0.3% of the amphetamine samples tested in 2025 (-3.3%).

2-PEA (PEA, or phenethylamine, or 2-phenethylamine) belongs to the group of monoamines and occurs naturally in the human body as well as in various plants. It forms the parent compound of an entire group of substances, the phenethylamines, which also includes, for example, amphetamine, 2C-B, or MDMA. According to some studies, 2-PEA itself has little to no effect on the human body even at high doses, if it is taken orally or intravenously. Consumption of 2-PEA is not recommended if medications with monoamine oxidase-inhibiting effects (MAO inhibitors, e.g., certain antidepressants) are being taken at the same time.

2-PEA can be used in the synthesis of amphetamine. The presence of 2-PEA could therefore indicate an improper synthesis. If it is present in higher quantities in the amphetamine sample, it can be assumed that it was added as a extender.

1.3.4 Other pharmacologically active substances analyzed

In addition to the most common extenders described above, small amounts of cocaine (6 samples), MDMA (3 samples), phenylacetone (3 samples), methamphetamine (4 samples), ketamine (1 sample), 4-FA (1 sample), and benzoic acid (1 sample) were detected in individual amphetamine samples. This is likely due to unintentional contamination (e.g., smear-contamination in previously used minigrips). In addition, there were 9 mislabelings in which no amphetamine was detected. Cocaine (1 sample), caffeine (1

[7] 1-PEA and 2-PEA can only be analyzed qualitatively by our laboratory. That is, we can only determine whether they are present in a powder or not.

sample), methamphetamine (1 sample), ketamine (2 samples), heroin (1 sample), 2C-B (1 sample), and in two cases, no controlled substance was analyzed.

More information on most of these substances is available on saferparty.ch

1.3.5 Paste or powder

Amphetamine pastes were long considered as particularly concentrated forms of amphetamine, as it was believed that they were pure and came directly from the manufacturing laboratory. However, these pastes are chemically impure, as they are not purified or only insufficiently purified in the manufacturing laboratory. Most samples sold as pastes consist of amphetamine salt-caffeine mixtures moistened with solvents and are rarely actual pastes[8]. They are moistened, for example, with phenylacetone or isopropyl alcohol to simulate a paste-like consistency (Appearance and odor of pastes: Phenylacetone or isopropyl alcohol are possible starting materials in amphetamine synthesis). Pastes are often liquid and sticky; in some cases, the moistening additive evaporates quickly. Due to the toxicity of these solvents, amphetamine pastes should always be thoroughly dried before consumption.

2 Conclusion

– The amphetamine content of the samples submitted to the DIZ has remained relatively stable since 2018, ranging from 58% to around 68%. Following the record high of the previous year (67.9%), there was a slight decline in 2025, with the average active ingredient content at 62.7%.

– Furthermore, a significant proportion of the samples (around 45%) exhibit very high active substance contents ranging from over 80% to 100%, even though this proportion has decreased slightly compared to the previous year. At the same time, the proportion of samples containing less than 40% amphetamine - around 30% - has increased. Particularly noteworthy is the increase in samples with less than 20% active substance content, the proportion of which has doubled compared to the previous year. The wide range of active substance levels indicates that the quality of the substances can still vary significantly.

– Caffeine and synthetic impurities remain among the most frequently detected substances in amphetamine samples. It should be noted that many amphetamine users are accustomed to the rapid onset and strong effects of caffeine and, during counseling, often describe a sample cut with caffeine as “very strong” prior to analysis. This creates a risk that users may overdose when consuming pure amphetamine due to the more subtle and delayed effects of these samples. Caffeine was slightly more prevalent in 2025, present in 48.2% of samples.

[8] Amphetamine base that has not been converted, or has been incompletely converted, into a salt such as hydrochloride or sulfate.

– A positive trend is evident in the area of synthetic impurities. These were detected in 16.8% of samples in 2025 - the lowest figure in the past ten years. This could indicate improvements in manufacturing processes. At the same time, it should be noted that even a small number of synthetic impurities can have significant health effects. It is also notable that the number of impurities per sample has decreased. Samples containing more than three different impurities were significantly less common.

– The proportion of samples containing up to two synthetic impurities remained largely stable compared to the previous year. The widespread assumption that paste-form amphetamine is of particularly high quality continues to be unconfirmed.

– In 2025, there was a significant decline in samples containing 2-PEA. These decreased from ten samples in the previous year to just one sample.

– The number of misdeclarations rose in 2025. One sample (white powder) sold as amphetamine was identified as heroin. Such cases demonstrate that a drug-checking analysis of the substances—where possible—is advisable. If drug checking is not available, cautiously testing a small amount can help reduce the risk of unforeseen effects.

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