

## LIST OF SUBSTANCES UNDER SURVEILLANCE 2023

A substance is placed on WHO ECDDs Surveillance List if the Committee considers the evidence of the impact of a new psychoactive substance (NPS) in causing substantial harm to health too scarce to recommend placement under international control.

If the substance has therapeutic applications (psychotropic medicine) the Committee weights the therapeutic benefits against evidence of harm, thereby taking into account the availability of alternative medicines.

The ECDD Secretariat then actively monitors if additional data on the harm of the substance comes available to justify a subsequent critical review.

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## NEW PSYCHOACTIVE SUBSTANCES

### Amphetamine-type stimulants

5-APB (5-APB 5-(2-aminopropyl)benzofuran)

**Added to surveillance list by 2<sup>nd</sup> WG (2017)**

**Last review: N/A**

Information has been brought to WHO's attention that 5-APB is being misused in a number of Member States. 5-APB is clandestinely manufactured and has been identified in seized products. 5-APB produces amphetamine-like effects that include euphoria, increased blood pressure and temperature, decreased appetite, increased wakefulness and physical activity, along with rapid and/or irregular heartbeat. 5F-APB has been associated with fatal intoxications. To date, 5-APB has not been pre- or critically reviewed by the ECDD. Added to surveillance in 2017. Considered at the 9<sup>th</sup> WG meeting (2021), where the committee determined that there was insufficient new information to justify a critical review.

5-MAPB

**Added to surveillance list by 2<sup>nd</sup> WG meeting (2017)**

**Last review: N/A**

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Information has been brought to WHO's attention that 5-MAPB is being misused in a number of Member States. 5-MAPB is clandestinely manufactured and has been identified in seized products. 5-MAPB has amphetamine-like effects that include euphoria, increased blood pressure and temperature, decreased appetite, increased wakefulness and physical activity, along with rapid and/or irregular heartbeat. 5-MAPB has been associated with a stimulant intoxication state. To date, 5-MAPB has not been pre- or critically reviewed by the ECDD.

### Desoxypradol (2-DPMP)

**Added to surveillance list by 2<sup>nd</sup> WG meeting (2017)**

**Last review: N/A**

Information has been brought to WHO's attention that 2-DPMP is being misused and has been identified in seized products in a number of Member States. 2-DPMP produces amphetamine-like effects that include euphoria, increased blood pressure and temperature, decreased appetite, increased wakefulness and physical activity, along with rapid and/or irregular heartbeat. 2-DPMP has been associated with fatal and non-fatal intoxications. To date, 2-DPMP has not been pre- or critically reviewed by the ECDD.

### MDAI (5,6-methylenedioxy-2-aminoindane)

**Added to surveillance list by 2<sup>nd</sup> WG meeting (2017)**

**Last review: N/A**

Information has been brought to WHO's attention that MDAI is being misused in a number of Member States. MDAI is clandestinely manufactured and has been identified in seized products. This substance has amphetamine-like effects, associated with abuse and adverse effects. MDAI has structural similarities to MDMA (3,4-methylenedioxy-N-methylamphetamine) and shares its behavioural properties. MDAI is likely to have similar adverse effects as MDMA; these include anxiety, restlessness, irritability, sleep disturbances, impulsiveness, nausea, sweating, high blood pressure, hyperthermia and dehydration. MDAI has been associated with fatal and non-fatal intoxications. To date, MDAI has not been pre- or critically reviewed by the ECDD. Added to surveillance in 2017. Considered at the 9<sup>th</sup> WG meeting (2021), where the committee determined that there was insufficient new information to justify a critical review.

## Benzodiazepines (NPS)

### Adinazolam

**Added to surveillance list by 9th WG meeting (2021)**

**Last review: [Critical review 44<sup>th</sup> ECDD \(2022\)](#)**

Adinazolam (IUPAC chemical name: 8-Chloro-N,N-dimethyl-6-phenyl-4H-[1,2,4]triazolo[4,3-a][1,4]benzodiazepine-1-methanamine) has effects similar to those of substances listed under Schedule IV of the Convention on Psychotropic Substances of 1971. There is, however, insufficient evidence that its use is a public health and social problem to justify its placement under international control. The Committee recommended that be kept under surveillance by the WHO Secretariat.

### Flubromazepam

**Recommended for surveillance at 46<sup>th</sup> ECDD meeting (2023)**

**Last review: [Critical review 46th ECDD \(2023\)](#)**

Flubromazepam is a 1,4-benzodiazepine. Although it is chemically similar to other benzodiazepines listed under Schedule IV of the Convention on Psychotropic Substances of 1971, little information is available on its effects. Few studies in experimental animals and no studies in humans were found on its effects or abuse potential. When reviewed by the ECDD, the limited information on its effects at that time provided insufficient evidence to justify the placement of flubromazepam under international control. The Committee recommended that flubromazepam be kept under surveillance by the WHO ECDD secretariat.

## Synthetic Cannabinoid Receptor Agonists

### 4F-MDMB-BICA (4F-MDMB-BUTICA)

**Recommended for surveillance at 44<sup>th</sup> ECDD meeting (2021)**

**Last review: [Critical review 44<sup>th</sup> ECDD \(2021\)](#)**

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Information was brought to WHO's attention that this substance is manufactured clandestinely, poses a risk to public health, and has no recognized therapeutic use. 4F-MDMB-BICA has a chemical structure similar to a number of synthetic cannabinoids, but its mechanism of action has yet to be confirmed. The magnitude of harm due to 4F-MDMB-BICA alone is unclear, and no animal or human studies have examined the effects or abuse potential of 4F-MDMB-BICA. Based on the limited information available concerning abuse, dependence and risks to public health, the 44<sup>th</sup> Committee recommended that there was insufficient evidence to justify placing 4F-MDMB-BICA under international control and recommended that it be kept under surveillance.

#### APINACA (AKB-48)

**Recommended for surveillance at 36<sup>th</sup> ECDD (2014)**

**Last review: [Critical review 42<sup>nd</sup> ECDD \(2019\)](#)**

Information has been brought to WHO's attention that APINACA is clandestinely manufactured and has been identified in seized products in a number of Member States. APINACA (also known as AKB-48) is a synthetic cannabinoid receptor agonist. While it may potentially have effects that are similar to those of other synthetic cannabinoids, information on its effects in humans is currently lacking. The magnitude of the public health problem associated with use of APINACA may not be great as the use of this substance has declined. The 42<sup>nd</sup> Committee recommended that APINACA be kept under surveillance.

#### RCS-4

**Recommended for surveillance at 36<sup>th</sup> ECDD (2014)**

**Last review: [Critical review 36<sup>th</sup> ECDD \(2014\)](#)**

Information has been brought to WHO's attention that RCS-4 is clandestinely manufactured and has been identified in seized products in a number of Member States. Preliminary data collected from the literature and from different countries indicated that this substance may cause substantial harm and that it has no medical use. However, the 36<sup>th</sup> Committee noted the challenges associated with the evidence base concerning the substance. Of particular significance was the lack of analytically confirmed cases of non-fatal and fatal intoxications involving RCS-4. The 36<sup>th</sup> Committee recommended that RCS-4 not be placed under international control at this time but be kept under surveillance.

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## JWH-250

**Recommended for surveillance at 36<sup>th</sup> ECDD (2014)**

**Last review:** [Critical review 36<sup>th</sup> ECDD \(2014\)](#)

Information has been brought to WHO's attention that JWH-250 is clandestinely manufactured and has been identified in seized products in a number of Member States. Preliminary data collected from the literature and from different countries indicated that this substance may cause substantial harm and that it has no medical use.

The 36<sup>th</sup> Committee noted the challenges associated with the evidence base concerning the substance. Of particular significance was the lack of analytically confirmed cases of non-fatal and fatal intoxications involving JWH-250. The Committee recommended that JWH-250 not be placed under international control at this time but be kept under surveillance.

## JWH-073

**Recommended for surveillance at 36<sup>th</sup> ECDD (2014)**

**Last review:** [Critical review 38<sup>th</sup> ECDD \(2016\)](#)

Information has been brought to WHO's attention that JWH-073 is clandestinely manufactured and has been identified in seized products in a number of Member States. Preliminary data collected from the literature and from different countries indicated that this substance may cause substantial harm and that it has no medical use.

From the 38th ECDD meeting, the available pharmacodynamic data related to JWH-073 demonstrate that this substance has the capacity to produce some effects similar to its homologue, JWH-018, which is included in Schedule II of the UN Convention on Psychotropic Substances of 1971. However, the data currently available do not make it possible to establish a direct link between JWH-073 abuse and appearance of public health and social problems that would be a requirement for placing this substance under international control. It is therefore recommended not to place JWH-073 under international control but to continue to keep it under surveillance.

## Synthetic cathinones

4-Fluoromethcathinone (flephedrone; 4-FMC)

**Recommended for surveillance at 36<sup>th</sup> ECDD (2014)**

**Last review:** [Critical review 36<sup>th</sup> ECDD \(2014\)](#)

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Information has been brought to WHO's attention that 4-FMC is being misused in a number of Member States. 4-FMC is clandestinely manufactured and has been identified in seized products. 4-FMC produces effects similar to psychomotor stimulants such as cocaine and methamphetamine although it appears to be less potent than methamphetamine. 4-FMC has been associated with a few fatal and non-fatal intoxications. Owing to the insufficiency of data regarding dependence, abuse and risks to public health, the 36<sup>th</sup> Committee recommended that 4-FMC not be placed under international control at this time but be kept under surveillance.

## Benzyllone

**Recommended for surveillance at 44<sup>th</sup> ECDD (2021)**

**Last review: [Critical review 44<sup>th</sup> ECDD \(2021\)](#)**

Information was brought to WHO's attention that this substance is manufactured clandestinely, poses a risk to public health, and has no recognized therapeutic use. Benzyllone has a mode of action suggestive of stimulant effects similar to other cathinones. It has been detected in post-mortem samples along with other substances, although there is no significant evidence of benzyllone playing a causative role in deaths. As its effects are relatively weak and there is no consistent evidence supporting the likelihood of abuse or dependence or the extent of public health and social problems related to use of benzyllone, the 44<sup>th</sup> Committee recommended that it not be placed under international control at this time but be kept under surveillance.

## Opioids

### Para-methoxy-butyrylfentanyl

**Recommended for surveillance at 41<sup>st</sup> ECDD (2018)**

**Last review: [Critical review 41<sup>st</sup> ECDD \(2018\)](#)**

The limited information available indicates that para-methoxy-butyrylfentanyl is an analogue of the opioid analgesic fentanyl. There is evidence of its use in a limited number of countries, with few reports of intoxication and no reports of death. In the cases of intoxication, the role of para-methoxy-butyrylfentanyl was not clear owing to the presence of other opioids. It has no therapeutic use. Currently, there is little evidence that para-methoxy-butyrylfentanyl is causing substantial harm that would warrant its placement under international control. The 41<sup>st</sup> Committee recommended that para-methoxy-butyrylfentanyl be kept under surveillance by the WHO Secretariat.

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### para-fluorofuranyl fentanyl (4-fluorofuranyl fentanyl)

**Added to surveillance list by 8<sup>th</sup> WG meeting (2020)**

**Last review: N/A**

para-fluorofuranyl fentanyl is an analogue of the opioid analgesic fentanyl. It has been identified as an opioid receptor agonist with analgesic properties that has no therapeutic use. It has the potential to cause serious adverse events as well as dependence but it has only been identified in a small number of countries with no information as to problems associated with its use. At present there is insufficient information on dependence, abuse and risks to public health associated with use of this substance to enable consideration of its potential to be placed under international control.

### Kratom /mitragynine/ 7-OH-mitragynine

**Added to surveillance list by 8<sup>th</sup> WG meeting (2020)**

**Last review: [Pre-review 44<sup>th</sup> ECDD \(2021\)](#)**

Mitragynine and 7-OH-mitragynine are substances with opioid activity that are found in the plant *Mitragyna speciosa* (kratom). The kratom plant is native to South-East Asia and has been used as a traditional medicine in a number of countries in that region. Opioid effects can be produced by consumption of the plant, extracts of the plant or by the purified substances. Use of mitragynine and 7-OH-mitragynine has increased significantly in recent years and there are reports of use from many countries across different regions. There are reports of dependence on these substances and of fatal and non-fatal overdoses in which consumption of mitragynine and/or 7-OH-mitragynine played a significant role.

At the 44<sup>th</sup> ECDD meeting in 2021, it was recommended that, due to insufficient evidence to recommend a critical review of kratom, mitragynine and 7-OH-mitragynine, these substances should be kept under surveillance.

## Tryptamines

### Alpha-methyltryptamine (AMT)

**Recommended for surveillance at 36<sup>th</sup> ECDD (2014)**

**Last review: [Critical review 36<sup>th</sup> ECDD \(2014\)](#)**

Information has been brought to WHO's attention that AMT is being misused in a number of Member States. AMT is clandestinely manufactured and has been identified



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in seized products. AMT is a tryptamine derivative that shares several similarities with the Schedule I tryptamine hallucinogens. Adverse effects of AMT include mild increases in blood pressure or respiration rate, restlessness, tachycardia, severe nausea, severe vomiting, impaired coordination, visual and auditory disturbances and distortions. AMT has been associated with fatal intoxications, although other drugs were present. The 36th ECDD (June 2014) reviewed AMT and recommended that, due to the insufficiency of evidence required to satisfy the criteria for international scheduling under the Conventions, it not be placed under international control but be kept under surveillance.

## PSYCHOACTIVE MEDICINES

### Gabapentin

**Added to surveillance list by 2<sup>nd</sup> WG meeting (2017)**

**Last review: N/a**

Gabapentin is used therapeutically as an anticonvulsant or antiepileptic drug. It may also be used in the treatment of nerve pain. It has been brought to WHO's attention that gabapentin may be being misused in some Member States. Adverse effects associated with gabapentin include hypoventilation, respiratory failure, myopathy, self-harm behavior, suicidal behavior, somnolence, dizziness and drowsiness. Gabapentin has been associated with several cases of abuse and drug related harm (e.g. suicide). To date, gabapentin has not been pre- or critically reviewed by the ECDD.

### Ketamine

**Added to surveillance list at 33<sup>rd</sup> ECDD (2003)**

**Last review: [Critical review 36<sup>th</sup> ECDD \(2014\)](#)**

Ketamine is a widely used anaesthetic, especially in developing countries, because it is easy to use and has a wide margin of safety when compared with other anaesthetic agents. While the 36<sup>th</sup> ECDD acknowledged the concerns raised by some countries and UN organizations, ketamine abuse currently does not appear to pose a sufficient public-health risk of global scale to warrant scheduling. Consequently, the 36<sup>th</sup> ECDD recommended that ketamine not be placed under international control at this time. Countries with serious abuse problems may decide to introduce or maintain control measures, but should ensure ready access to ketamine for surgery and anaesthesia for human and veterinary care.

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## Nitrous Oxide

**Added to surveillance list at 46th ECDD (2023)**

**Last review: [Pre-review 46th ECDD \(2023\)](#)**

Nitrous oxide is a widely used inhalation anaesthetic listed on the 2023 WHO Model List of Essential Medicines and the Essential Medicines List for Children. When pre-reviewed by the ECDD, the Committee acknowledged the concerns raised by some countries with respect to its nonmedical use. However, the Committee recommended that nitrous oxide not proceed to critical review because of the absence of evidence of illicit manufacture and of common trading across borders, and in recognition of its global therapeutic value. For these reasons the Committee recommended that nitrous oxide not proceed to critical review but be kept under surveillance by the WHO secretariat.

## Phenibut

**Added to surveillance list by 2<sup>nd</sup> WG (2017)**

**Last review: [Pre-review 44<sup>th</sup> ECDD \(2021\)](#)**

Phenibut is an anti-anxiety drug which is an approved medicinal product in one Member State. It is currently marketed in other Member States as a nutritional supplement aid for anxiety, insomnia and cognitive improvement as well as a mood enhancer. Phenibut has been associated with intoxications with adverse effects including stupor, dystonia and hypothermia. There is some suggestion that it has abuse potential and may produce dependence. At the 44<sup>th</sup> ECDD meeting (2021), phenibut was pre-reviewed. Due to limited information on withdrawal, abuse liability and magnitude of misuse or abuse, it was recommended to keep phenibut under surveillance.

## Pregabalin

**Recommended for surveillance at 41<sup>st</sup> ECDD (2018)**

**Last review: [Critical review 41<sup>st</sup> ECDD \(2018\)](#)**

Pregabalin is an anti-epileptic medication which is also used to treat neuropathic pain and generalized anxiety disorder. It has been brought to WHO's attention that pregabalin may be being misused in some Member States. There have been reports of abuse, particularly among current or past opioid abusers and it has been associated with intoxications. Effects described by users include sedation, dissociation, numbness,

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uninhibited behavior and audio/visual hallucinations. To date, pregabalin has not been pre- or critically reviewed by the ECDD.

## Tapentadol

**Recommended for surveillance at 36<sup>th</sup> ECDD (2014)**

**Last review: [Pre-review 36<sup>th</sup> ECDD \(2014\)](#)**

Information has been brought to WHO's attention that tapentadol is being misused in some Member States. Tapentadol has structural similarity to morphine and produces analgesia in acute and chronic pain states.

Few published preclinical data on dependence potential for tapentadol exist, but animal studies have shown that tolerance and dependence developed in rats. There was a small amount of evidence of withdrawal in clinical studies in humans. Patients taking tapentadol were less likely to have withdrawal symptoms as assessed using the Clinical Opiate Withdrawal Scale than subjects taking oxycodone.

Based on the preclinical and clinical pharmacology of tapentadol, as well as anecdotal data, the potential for abuse with tapentadol is consistent with that of currently marketed drugs such as hydromorphone, oxycodone, morphine, and tramadol. Tapentadol has been marketed since 2008 without significant events or signs of abuse and currently is dispensed with tamper-resistant coatings. However, tapentadol has not yet appeared in many drug use surveys or surveillance reports, which limits the data regarding tapentadol abuse, dependence, diversion, recreational use, or poison control. Those data that are available suggest the potential for abuse of tapentadol to be similar to that of other  $\mu$ -opioid agonists or slightly less. While three respondents to the WHO questionnaire confirmed recreational/harmful use of tapentadol, thirteen stated that there was no such use.

Owing to the current insufficiency of data regarding dependence, abuse and risks to public health (including risks to the individual), the 36<sup>th</sup> ECDD recommended that tapentadol be kept under surveillance.

## Tramadol

**Recommended for surveillance at 33rd ECDD (2002)**

**Last review: [Critical review 41<sup>st</sup> ECDD \(2018\)](#)**

Tramadol is used therapeutically in the treatment of acute and chronic pain of moderate to severe intensity. It produces opioid-like effects with adverse effects including respiratory depression, nausea, dizziness, and vomiting. Tramadol is used

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world-wide and is listed in many medical guidelines for pain treatment. There is some evidence of abuse and several Member States have reported seizures of illicit tramadol. Fatal intoxications are rare and appear to be associated with large overdoses of tramadol and co-ingestion of other drugs (including alcohol). Tramadol was pre-reviewed at the 28th meeting (1992) and the 32nd meeting (2000) of the ECDD. A critical review was undertaken at the 33rd meeting (2002), however, the Committee decided that the information was not sufficient to recommend international control of tramadol, but was adequate to recommend surveillance. Subsequently, tramadol was pre-reviewed again at the 34th meeting (2006), however, the Committee concluded that there was not sufficient evidence to justify a critical review. An update on tramadol was considered at the 36th meeting (2014) and once again the Committee concluded there was insufficient evidence to warrant a critical review.

The 41<sup>st</sup> ECDD was concerned by the increasing evidence of tramadol abuse in a number of countries in diverse regions, in particular the widespread abuse of tramadol in many low-to-middle-income countries. Equally concerning was the clear lack of availability of alternative analgesics in a number of countries and in emergency and crisis situations where tramadol is used for treatment of moderate to severe pain.

The 41<sup>st</sup> ECDD was strongly of the view that the extent of abuse and evidence of public health risks associated with tramadol warranted consideration of scheduling. However, it recommended that tramadol not be scheduled at this time in order to avoid an adverse impact on access to this medication, especially in countries where tramadol may be the only available opioid analgesic, or in crisis situations where there is little or no access at all to other opioids.

The 41<sup>st</sup> ECDD also strongly urged WHO and its partners to address, as a high priority, the grossly inadequate access to and availability of opioid pain medication in low-income countries. WHO and its partners are also strongly encouraged to update and disseminate WHO pain management guidelines and to support both country-specific capacity-building needs and prevention and treatment initiatives in order to address the tramadol crisis in low-income countries.

The 41<sup>st</sup> ECDD also recommended that WHO and its partners support countries in strengthening their regulatory capacity and mechanisms for preventing the supply and use of falsified and substandard tramadol.

The 41<sup>st</sup> ECDD recommended that the WHO Secretariat should continue to keep tramadol under surveillance, collect information on the extent of problems associated with tramadol misuse and on its medical use, and that tramadol be considered for review at a future meeting.

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## Zaleplon

**Recommended for surveillance at 33<sup>rd</sup> ECDD (2003)**

**Last review: [Pre-review 33<sup>rd</sup> ECDD \(2003\)](#)**

Although the abuse potential of this substance is considered to be similar to that of zolpidem and triazolam, critical review was not recommended at this stage as the information on actual abuse available to the 33<sup>rd</sup> Committee was insufficient to confirm the existence of significant public health and social problems in more than one country. However, the 33<sup>rd</sup> Committee recommended that WHO continue the surveillance of zaleplon.

## Zopiclone

**Recommended for surveillance at 29<sup>th</sup> ECDD (1995)**

**Last review: [Pre-review 45<sup>th</sup> ECDD \(2022\)](#)**

Zopiclone (IUPAC chemical name: 6-(5-Chloropyridin-2-yl)-7-oxo-6,7-dihydro-5H-pyrrolo[3,4-b]pyrazin-5-yl 4-methylpiperazine-1-carboxylate) is a sedative hypnotic drug of the cyclopyrrolone class. The Committee noted that concern has been expressed in several countries regarding non-prescription use of zopiclone. While there have been reports of adverse effects, overdose, withdrawal symptoms and an increased number of seizures of the substance, there is still insufficient evidence that zopiclone is or is likely to be abused to such an extent as to constitute a public health and social problem.

The Committee also noted that zopiclone is widely used therapeutically in many countries.

The Committee recommended that zopiclone not proceed to critical review but be kept under surveillance by the WHO Secretariat.