Basic Information on Substances

Frequently Used in the Illicit Manufacture

of Narcotic Drugs or Psychotropic Substances

(Article 12, 1988 Convention)

for Use by Non-Laboratory Officials

prepared by

LABORATORY SECTION
TECHNICAL SERVICES BRANCH
INTRODUCTION

The 1988 Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances addresses in article 12 the monitoring and control of specific chemicals, solvents and precursors used in the illegal processing or manufacture of controlled drugs. Twenty-two substances frequently used in the illicit manufacture of narcotic drugs or psychotropic substances are currently placed under international control.

This publication was prepared in response to the growing demand for information on those controlled substances and is meant to provide assistance especially to law enforcement officers. It provides a basic description of substances most frequently used in the illicit manufacture of drugs of abuse, including their synonyms, physical appearance and their legitimate and illicit uses. Supplementary, more detailed information on the illicit production of drugs of abuse for clandestine laboratory investigations is provided in the manual "Clandestine Manufacture of Substances under International Control" (ST/NAR/10), which is currently undergoing revision and which will be published soon.

In addition to the twenty-two substances under international control, this publication includes seven substances which are frequently encountered in the clandestine manufacture of heroin and which are not controlled under the 1988 Convention. Special attention is drawn to the safety warnings as well as to the guidelines for the handling and storage of the substances, i.e. since most of these substances are corrosive, inflammable or toxic, inappropriate handling may lead to serious accidents.

In order to continuously update this publication to satisfy law enforcement officers' needs for information, the Laboratory of the Technical Services Branch would welcome observations, suggestions and comments on its contents and usefulness. Those observations, suggestions and comments may be addressed to:

Laboratory Section
Technical Services Branch
United Nations International Drug Control Programme
Vienna International Centre
P.O.Box 500
A-1400 Vienna
Austria
CONTENTS

General safety warning............................................................................................................................. 1

Acetic acid ................................................................................................................................................ 2
Acetic anhydride ....................................................................................................................................... 4
Acetone ..................................................................................................................................................... 6
N-Acetylanthranilic acid .......................................................................................................................... 8
Acetyl chloride........................................................................................................................................10
Anthraniolic acid .................................................................................................................................... 12
Chloroform .............................................................................................................................................. 14
Ephedrine ................................................................................................................................................16
Ergometrine ............................................................................................................................................20
Ergotamine .............................................................................................................................................24
Ethyl ether ...............................................................................................................................................27
Ethylidene diacetate ................................................................................................................................29
Hydrochloric acid ...................................................................................................................................31
Isosafrole .................................................................................................................................................33
Lysergic acid...........................................................................................................................................35
3,4-Methylenedioxyphenyl-2-propanone ..............................................................................................37
Methyl ethyl ketone ................................................................................................................................39
Phenylacetic acid ....................................................................................................................................41
1-Phenyl-2-propanone ............................................................................................................................43
Phosphorous pentachloride ....................................................................................................................45
Phosphorous trichloride...........................................................................................................................47
Piperidine ................................................................................................................................................49
Piperonal ..................................................................................................................................................51
Potassium permanganate .......................................................................................................................53
Pseudoephedrine .....................................................................................................................................55
Safrole .....................................................................................................................................................60
Sulfuric acid ............................................................................................................................................62
Thionyl chloride .......................................................................................................................................64
Toluene ....................................................................................................................................................66

References...............................................................................................................................................68

Annex - Tables........................................................................................................................................70
!!! GENERAL SAFETY WARNING !!!!

Within the group of controlled precursors and essential chemicals, there are HIGHLY FLAMMABLE AND EXPLOSIVE as well as HIGHLY CORROSIVE substances.

Therefore,

• **When handling** suspected material:
  - NEVER TASTE of SNIFF suspected material;
  - DO NOT SMOKE;
  - keep away from sources of ignition and heat (e.g. motors, lighters, direct sun light, hot plates);
  - wear safety goggles and suitable gloves (e.g. latex, vinyl);
  - handle the material at a well ventilated place;
  - do not eat and drink while handling the material;
  - take special care when transporting the material, follow the guidelines recommended for the transport of hazardous chemicals.

• **In case of an accident**:
  - immediately take off contaminated clothing;
  - in case of contact with skin and/or eyes, rinse immediately with plenty of water and seek medical advice;
  - in case of spillage of larger amounts, stop smoking, evacuate the area and inform the fire brigade.

• **Store** the suspected material in a separate room which should be well ventilated, cool, dry and fireproof. Store the material in well closed containers. Follow the more detailed guidelines for storage given below.

• **Do not dispose** of suspected materials by pouring them into the canalization system or by throwing them into the household garbage. Instead forward them to a company/organization authorized for the collection and the disposal of hazardous waste.
ACETIC ACID

Molecular Formula: C₂H₄O₂  Molecular Weight: 60.05

International Control: Not under International Control

Harmonized System Number*: 2915.21

Other Names: Acide acétique
       Acide acétique cristallisable
       Acido acético
       Acidum aceticum
       Aci-Jel
       Concentrated acetic acid
       Essigsäure
       Ethanoic acid
       Ethylic acid
       FEMA No.2006
       Glacial acetic acid
       Methanecarboxylic acid
       Vinegar acid

Physical Appearance:

       Translucent, crystalline mass or clear, colourless liquid with a pungent, vinegar-like odour.

Chemical/Physical Properties:

Melting Point: 17°C  Boiling Point: 118°C

Density (g/cm³, 20°C): 1.0492

Solubility: Miscible with water, alcohol, benzene, chloroform, ethyl ether, glycerol, carbon tetrachloride; practically insoluble in carbon disulfide.

* Harmonized Commodity Description and Coding System, Harmonized System Committee of the Customs Cooperation Council, Brussels, Belgium
!!!!! SAFETY WARNING !!!!!!

- corrosive
- vapours irritating to the eyes and the respiratory tract
- More severe exposures result in pulmonary edema.
- flammable

STORAGE/HANDLING

- Keep in a fireproof place.
- Separate form oxidants and strong bases.
- Keep away from open flame and sparks, no smoking.
- Handle at a well ventilate place, under a hood or with respiratory protection.
- Wear safety goggles or a face shield and gloves.

- In case of:
  
inhalation:               → fresh air, rest, place in half-sitting position,
                       → seek medical advice;

  contact with skin:      → remove contaminated clothing,
                       → flush skin with plenty of water or shower,
                       → seek medical advice;

  contact with eyes:      → immediately rinse with plenty of water (min. 10 minutes),
                       → immediately seek medical advice;

  ingestion:             → drink a lot of water,
                       → DO NOT induce vomiting,
                       → immediately seek medical advice.

Legitimate Use:

Widely used in commercial organic syntheses (manufacture of various acetates, acetyl compounds, vinyl acetate, cellulose acetate, acetate rayon, plastics); used for printing calico and dyeing silk; solvent, e.g. for gums, resins, volatile oils; used in food industry and as pharmaceutical aid.

Illicit Use:

In the clandestine manufacture of 1-phenyl-2-propanone (P2P), for the illicit synthesis of amfetamine and metamfetamine and in the clandestine manufacture of heroin. (also see annex)
ACETIC ANHYDRIDE

Molecular Formula: $\text{C}_4\text{H}_6\text{O}_3$  
Molecular Weight: 102.09

International Control: Table II, 1988 Convention

Harmonized System Number*: 2915.24.0000

Other Names: Acetanhydrid, -e  
Acetic acid anhydride  
Acetic oxide  
Acetyl acetate  
Acetyl anhydride  
Acetyl ether  
Acetyl oxide  
Anhydride acétique  
Anhydride éthanoïque  
Anidride acetica  
Anídrido ácido acético  
Anidrido etanoico

Physical Appearance:

Mobile, colourless liquid, penetrating choking characteristic odour, closely related to vinegar.

Chemical/Physical Properties:

Melting Point: -73.1°C  
Boiling Point: 140°C

Density (g/cm³, 20°C): 1.082

Solubility: Miscible with ethyl ether, soluble in benzene and chloroform and a number of other organic solvents; dissolves in water with conversion to acetic acid.

!!! SAFETY WARNING !!!

- corrosive  
- vapours irritating to eyes, nose and throat  
- can react vigorously with oxidizing materials  
- reacts violently on contact with water or steam
STORAGE/HANDLING

- Keep in a dry, fireproof place.
- Store in containers lined with stainless steel or polyethylene.
- Separate from oxidants, strong bases and alcohols.

- Keep away from open flame and sparks, no smoking.
- Handle at a well ventilate place, under a hood or with respiratory protection.
- Wear safety goggles or a face shield, protective clothing and gloves.

- In case of:

  inhalation:  → fresh air, rest, place in half-sitting position,
  → seek medical advice;

  contact with skin:  → remove contaminated clothing,
  → flush skin with plenty of water or shower,
  → seek medical advice;

  contact with eyes:  → immediately rinse with plenty of water (min. 10 minutes),
  → immediately seek medical advice;

  ingestion:  → drink a lot of water,
  → DO NOT induce vomiting,
  → immediately seek medical advice.

- In case of fire, DO NOT use water-based extinguishers.

Legitimate Use:

Acetylating agent in chemical and pharmaceutical industry; for manufacture of cellulose acetate, for
textile sizing agents and cold-bleaching activators; for polishing metals; production of acetylated
plastic auxiliaries and certain types of brake fluids; in mixture with nitric acid as a nitrating agent
(production of dyes, explosives).

Illicit Use:

In the clandestine manufacture of heroin; for the illicit synthesis of methaqualone and mecloqualone,
acetyl-alpha-methylfentanyl; 1-phenyl-2-propanone (P2P) and N-acetyl-anthranilic acid. (also see
annex)
ACETONE

Molecular Formula: C₃H₆O  Molecular Weight: 58.08

International Control: Table II, 1988 Convention

Harmonized System Number*: 2914.11.5000

Other Names: Aceton, -a, -e, -um  â-Ketonepropane
            Acido piroacetico  â-Ketopropane
            â-Cétopropane  Methyl ketone
            Diméthylcétal  Propanone
            Diméthylcétone  2-Propanone
            Diméthylformaldéhyde  Propan-2-one
            Dimethylketone  Pyroacetic acid
            Esprit pyroligneux  Pyroacetic ether
            Ether pyroacétique  Quetona de metilo

Physical Appearance:

    Colourless liquid, volatile with sweetish, characteristic odour.

Chemical/Physical Properties:

    Melting Point: -94°C  Boiling Point: 56.5°C
    Density (g/cm³, 20°C): 0.7899
    Solubility: Miscible with water and most organic solvents.

!!! SAFETY WARNING !!!

- highly flammable
- skin and severe eye irritant
- inhalation and ingestion produce headaches, dizziness and vomiting
STORAGE/HANDLING

- Store in closed containers, at a temperature not exceeding 15°C.
- Keep containers in a well-ventilated place, away from heat, sparks and flames.
- Separate from oxidants.

- Keep away from open flame and sparks, no smoking.
- Handle at a well ventilate place, under a hood or with respiratory protection.
- Wear safety goggles and gloves.

- In case of:
  - **inhalation:** → fresh air, rest,
    → seek medical advice;
  - **contact with skin:** → remove contaminated clothing,
    → flush skin with plenty of water or shower,
    → seek medical advice if necessary;
  - **contact with eyes:** → immediately rinse with plenty of water (min. 10 minutes),
    → seek medical advice;
  - **ingestion:** → drink a lot of water,
    → *DO NOT* induce vomiting,
    → seek medical advice.

Legitimate Use:

Commonly used solvent in chemical laboratories and chemical/pharmaceutical industry; in the production of lubricating oils and as an intermediate in the manufacture of chloroform and of various pharmaceuticals and pesticides; in the manufacture of plastics, paints, varnishes, cosmetics.

Illicit Use:

As solvent in processing opium and coca leaves, leading to the manufacture of heroin and cocaine; also used as solvent in the synthesis of LSD and amphetamines. (also see annex)
**N-ACETYLANTHRANILIC ACID**

**Molecular Formula:** C$_9$H$_9$NO$_3$  
**Molecular Weight:** 179.18

**International Control:** Table I, 1988 Convention.

**Harmonized System Number**: 2924.29.4500

**Other Names:**
- 2-Acetamidobenzoic acid
- o-Acetamidobenzoic acid
- ortho-Acetamidobenzoic acid
- o-(Acetylamino)benzoic acid
- N-Acetylaminobenzoic acid
- 1-Acetylamino-2-carboxybenzene
- N-Acetylanthranilsäure
- Anthranilic acid, N-acetyl-
- Benzoic acid, 2-(acetylamino)-
- 2-Carboxyacetanilide

**Physical Appearance:**

Fine white or off-white crystalline powder.

**Chemical/Physical Properties:**

**Melting Point:** 184.5 - 187°C

**Solubility:** Moderate solubility in most organic solvents; low solubility in water.

!!! SAFETY WARNING !!!

- Harmful if swallowed
STORAGE/HANDLING

- Store in tightly closed containers in a cool, dry area.
- Handle at a well ventilate place.
- Wear safety goggles, gloves and a dust mask.
- Avoid contact with skin and eyes.
- Do not eat, drink or smoke while handling the substance.

- In case of:
  contact with skin: → remove contaminated clothing,
  → wash with plenty of water and soap,
  → seek medical advice if necessary;
  contact with eyes: → immediately rinse with plenty of water (min. 10 minutes),
  → seek medical advice;
  ingestion: → rinse mouth with plenty of water,
  → if feeling unwell, immediately seek medical advice.

Legitimate Use:

In the manufacture of pharmaceuticals, plastics and fine chemicals.

Illicit Use:

In the clandestine synthesis of methaqualone and mecloqualone. (also see annex)
ACETYL CHLORIDE

Molecular Formula: \( \text{C}_2\text{H}_3\text{ClO} \)  \hspace{1cm} \text{Molecular Weight:}  \hspace{0.5cm} 78.50

International Control: Not under International Control

Other Names: Acetic acid chloride
Acetic chloride
Acetylchlorid
Chlorure d'acétyle
Cloruro de acetilo
Essigsäurechlorid
Ethanoyl chloride
RCRA Waste Number U006

Physical Appearance:

Colourless, fuming liquid with a strong, pungent odour.

Chemical/Physical Properties:

Melting Point: -112°C  \hspace{1cm} \text{Boiling Point:}  \hspace{0.5cm} 52°C

Density (g/cm³, 20°C): 1.1051

Solubility: Miscible with acetone, benzene, chloroform, ethyl ether, glacial acetic acid, petroleum ether, toluene, carbon disulfide.
It is decomposed by water and by alcohols.

!!!!!! SAFETY WARNING !!!!!!!

- corrosive
- vapours irritating to the eyes and the respiratory tract
- More severe exposures result in pulmonary edema.
- highly flammable
- forms explosive air-vapour mixtures
- reacts violently with water, alcohols, bases and many other compounds
## STORAGE/HANDLING

- Keep in a dry, fireproof place.
- Separate from strong bases and alcohols.

- Keep away from open flame and sparks, no smoking.
- Handle at a well ventilate place, under a hood or with respiratory protection.
- Wear safety goggles or a face shield, protective clothing and gloves.

- In case of:
  - **Inhalation:** → fresh air, rest, → seek medical advice;
  - **Contact with skin:** → remove contaminated clothing, → flush skin with plenty of water or shower, → seek medical advice;
  - **Contact with eyes:** → immediately rinse with plenty of water (min. 10 minutes), → immediately seek medical advice;
  - **Ingestion:** → drink a lot of water, → immediately seek medical advice.

- **In case of fire, DO NOT use water-based extinguishers.**

---

**Legitimate Use:**

Acetylating agent in the synthesis of pharmaceuticals and dyes, in the manufacture of lubricating grease and rubber, in polymerization processes. Used in the testing for cholesterol and for the determination of water in organic liquids.

**Illicit Use:**

In the clandestine manufacture of heroin. (also see annex)
ANTHRANILIC ACID

Molecular Formula: C₇H₇NO₂  Molecular Weight: 137.14

International Control: Table II, 1988 Convention

Harmonized System Number*: 2922.49.3500

Other Names: Acide 2-aminobenzoïque  
Acide anthranilique  
Acido antranilico  
Acido orto-aminobenzoico  
2-Aminobenzoesäure  
2-Aminobenzoic acid  
o-Aminobenzoic acid  
ortho-Aminobenzoic acid  
1-Amino-2-carboxybenzene  
o-Anthranilic acid  
 Anthranilsäure  
Carboxyanilin, -e  
2-Carboxyanilin, -e  
o-Carboxyaniline  
ortho-Carboxyanilline  
NCI-CO 1730  
Vitamin L  
Vitamino L1

Physical Appearance:

White to pale yellow powder with sweetish taste.

Chemical/Physical Properties:

Melting Point: 144 - 147°C

Solubility: Soluble in hot water, ethanol, ethyl ether, glycerol, slightly soluble in cold water.

!!! SAFETY WARNING !!!

- Harmful if swallowed  
- Irritating to eyes and the respiratory tract
STORAGE/HANDLING

- Store in tightly closed containers and in a cool, dry area.
- Handle at a well ventilate place.
- Wear safety goggles, gloves and a dust mask.
- Avoid contact with skin and eyes.
- Do not eat, drink or smoke while handling the substance.

- In case of:
  - contact with skin: → remove contaminated clothing,
  → wash with plenty of water and soap,
  → seek medical advice if necessary;
  - contact with eyes: → immediately rinse with plenty of water (min. 10 minutes),
  → seek medical advice;
  - ingestion: → rinse mouth with plenty of water,
  → if feeling unwell, immediately seek medical advice.

Legitimate Use:

Chemical intermediate required in the manufacture of dyes, pharmaceuticals and perfumes, also used in the preparation of bird and insect repellents.

Illicit Use:

In the clandestine synthesis of methaqualone and mecloqualone. (also see annex)
CHLOROFORM

Molecular Formula: CHCl₃  Molecular Weight: 119.38

International Control: Not under International Control

Harmonized System Number*: 2903.13

Other Names: Chloroforme
Chloroformium anaesthesicum
Chloroformum pro narcosi
Cloroformio
Cloroformo
Formyl trichloride
Freon 20
Methylene trichloride
Methane, trichloro-
Methenyl trichloride
Methyl trichloride
NCI-C02686
R 20
RCRA Waste Number U044
TCM
Trichloroform
Trichloromethane

Physical Appearance:
Highly refractive, colourless, mobile, volatile, nonflammable liquid with a characteristic sweet odour.

Chemical/Physical Properties:

Melting Point: -64°C  Boiling Point: 61°C

Density (g/cm³, 20°C): 1.4832

Solubility: Miscible with alcohol, benzene, ethyl ether, petroleum ether, carbon tetrachloride, carbon disulfide, oils. Slightly soluble in water.
!!!!!! SAFETY WARNING !!!!!!!

- poisonous by inhalation and ingestion
- Inhalation results in hallucinations, distorted perception, nausea and vomiting, hypotension, respiratory depression and loss of consciousness.
- skin and eye irritant
- Prolonged and repeated exposure can cause liver and kidney damages.
- carcinogenic

STORAGE/HANDLING

- Keep in a cool place, protected from light.
- Ventilate at floor level.

- Handle at a well ventilate place, under a hood or with respiratory protection.
- Wear safety goggles and gloves.

- In case of:
  inhalation: → fresh air, rest,
  → seek medical advice;
  contact with skin: → remove contamminated clothing,
  → flush skin with plenty of water or shower,
  → seek medical advice;
  contact with eyes: → immediately rinse with plenty of water (min. 10 minutes),
  → seek medical advice;
  ingestion: → rinse mouth with water,
  → DO NOT induce vomiting,
  → immediately seek medical advice.

Legitimate Use:

Commonly used solvent in chemical laboratories and chemical/pharmaceutical industry; extractant for fats, oils, rubber, alkaloids, waxes, gutta-percha, resins; used as cleansing agent. Chemical intermediate in the synthesis of the refrigerant fluorocarbon 22. In medicine as a general anesthetic in former times, today obsolete because of its toxicity.

Illicit Use:
Solvent which can be used in the production of cocaine and heroin and for numerous other clandestine drug syntheses. (also see annex)
**EPHEDRINE**

<table>
<thead>
<tr>
<th>Molecular Formula</th>
<th>Molecular Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>base: C\textsubscript{10}H\textsubscript{15}NO</td>
<td>165.23</td>
</tr>
<tr>
<td>base hemihydrate: C\textsubscript{10}H\textsubscript{15}NO\cdot\frac{1}{2}H\textsubscript{2}O</td>
<td>174.24</td>
</tr>
<tr>
<td>hydrochloride: C\textsubscript{10}H\textsubscript{15}NO-HCl</td>
<td>201.70</td>
</tr>
<tr>
<td>nitrate: C\textsubscript{10}H\textsubscript{15}NO-HNO\textsubscript{3}</td>
<td>228.25</td>
</tr>
<tr>
<td>sulfate: (C\textsubscript{10}H\textsubscript{15}NO)\textsubscript{2}-H\textsubscript{2}SO\textsubscript{4}</td>
<td>428.55</td>
</tr>
</tbody>
</table>
**International Control:** Table I, 1988 Convention.

<table>
<thead>
<tr>
<th>Harmonized System Number*:</th>
<th>Adjusted Harmonized System Number**:</th>
</tr>
</thead>
<tbody>
<tr>
<td>base: 2939.40.5000</td>
<td>base:</td>
</tr>
<tr>
<td></td>
<td>*-ephrine: 2939.40.5001</td>
</tr>
<tr>
<td></td>
<td>l-ephrine: 2939.40.5002</td>
</tr>
<tr>
<td></td>
<td>dl-ephrine: 2939.40.5003</td>
</tr>
<tr>
<td>base: hydrochloride: 2939.40.5000</td>
<td>hydrochloride:</td>
</tr>
<tr>
<td></td>
<td>d-ephrine: 2939.40.5004</td>
</tr>
<tr>
<td></td>
<td>l-ephrine: 2939.40.5005</td>
</tr>
<tr>
<td></td>
<td>dl-ephrine: 2939.40.5006</td>
</tr>
<tr>
<td>nitrate: 2939.40.5000</td>
<td>nitrate: 2939.40.5007</td>
</tr>
<tr>
<td>sulfate: 2939.40.5000</td>
<td>sulfate: 2939.40.5008</td>
</tr>
</tbody>
</table>

**Other Names:**

- Eciphin
- Efedrin
- Ephedrate
- Éphedremal
- Ephedrin, -e, -um
- (-)-Ephedrin, -e
- l-Ephedrin, -e
- Ephedrina anidra
- Éphedrina emiidrato
- L(-)-Ephedrine
- (-)-(1R,2S)-Ephedrine
- (-)-erythro-Ephedrine
- 1(R),2(S)-erythro-(->-Ephedrine
- Éphédrine anhydre
- Ephedrine anhydrous
- Ephédrine hémihydratée
- Éphédrin hemihydrat
- dl-Ephedrinum
- Ephedrinum anhydricum
- Ephedrinum hemihydratricum
- Ephedrinum hydratum
- Éphédrin, wasserfreies

**Adjusted Harmonized System by UNDCP to distinguish between substances within a group/class.**
Ephedrivo
á-Hydroxy-á-methylaminepropylbenzene
1-Hydroxy-2-methylamino-1-phenylpropane
á-Hydroxy-á-methyaminopropylbenzene
I-Sedrin
Lexofedrin
á-[1-(Methylamino)ethyl]benzene methanol
á-[1-(Methylamino)ethyl]benzenemethanol
[R-(R',S')]-á-[1-(Methylamino)ethyl]benzenemethanol
á-[1-(Methylamino)ethyl]benzyl alcohol
1-á-(1-Methylaminoethyl)benzyl alcohol
2-Methylamino-1-phenylpropanol
2-Methylamino-1-phenylpropan-1-ol
2-Methylamino-1-phenyl-1-propanol
(1R,2S)-2-Methylamino-1-phenyl-1-propanol
(1R,2S)-2-Methylamino-1-phenyl-propan-1-ol hemihydrate
1-Phenyl-1-hydroxy-2-methylaminopropane
1-Phenyl-2-methylamino-1-propanol
1-Phenyl-2-methylaminopropanol
Racephedrine

hydrochloride:
Asthmapedrine
Biophedrin
Caniphedrin
Efedrina chloridrato
Efedron
Efetonina
Eggophedrin
Ephédrine chlorhydrate
Ephedrine chloride
Ephedrine hydrochloride
(-)-Ephedrine hydrochloride
Ephedrinhydrochlorid
Ephedrini hydrochloricum
Éphédrinium chloratum
Ephedrimum chloratum
l-Ephedinum hydrochloricum
dl-Ephedinum hydrochloricum
Ephedronguent
Ephedrosst
Ephetonin, -e
Fedrine
(-)-(1R,2S)-N-(1-Hydroxy-1-phenylprop-2-yl)-N-methylammonium hydrochloride

hydrochloride

[R-(R*,S*)]-\(\alpha\)-(1-(Methylamino)ethyl)benzenemethanol hydrochloride
dl-\(\alpha\)-(1-(Methylamino)ethyl)benzyl alcohol hydrochloride
Minus ephedrine hydrochloride
1-Phenyl-2-methylaminopropanol-1 hydrochloride
Racephedrine hydrochloride
Reukap
Sanedrine

sulfate:

Benzenemethanol, \(\alpha\)-[1-(methylamino)ethyl]-, [R-(R*,S*)]-, sulfate (2:1)
Ectasuleminus
(-)-Ephedrine sulfate (2:1)
Ephedrine sulfate
Ephedrini sulfas
Ephedsol
Isofedrol
Iso-phedrizem
1-\(\alpha\)-[1-(Methylamino)ethyl]benzyl alcohol sulfate
NCI-C55652
1-Phenyl-2-methylaminepropanol-1 sulfate
Sal-Phedrine
Spaneph

Physical Appearance:

base: Crystals/waxy solid crystals or granules with soapy feel.
hydrochloride: Orthorhombic needles.
sulfate: Crystals/orthorhombic needles. White or slightly reddish yellow crystals.

Chemical/Physical Properties:

Melting Point:

<table>
<thead>
<tr>
<th>Type</th>
<th>Melting Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>base</td>
<td>79°C</td>
</tr>
<tr>
<td>hydrochloride: (racemate)</td>
<td>187 - 188°C</td>
</tr>
<tr>
<td>(l-isomer)</td>
<td>216 - 220°C</td>
</tr>
<tr>
<td>nitrate</td>
<td>126 - 128°C</td>
</tr>
<tr>
<td>sulfate</td>
<td>247°C</td>
</tr>
</tbody>
</table>

Solubility:

base: Soluble in water, alcohol, ethyl ether, chloroform, oils.
hydrochloride: Soluble in water, very soluble in alcohol, practically insoluble in ethyl ether.

sulfate: Soluble in water, partly soluble in alcohol.

!!! SAFETY WARNING !!!
- Harmful if swallowed
- Do not breathe dust!
- Avoid contact with skin and eyes!

STORAGE/HANDLING
- Keep in well-closed containers, protected from light.
- Handle at a well ventilate place.
- Wear safety goggles, gloves and a dust mask.
- Avoid contact with skin and eyes.
- Do not eat, drink or smoke while handling the substance.

- In case of:
  - contact with skin: \(\rightarrow\) remove contaminated clothing, \(\rightarrow\) wash with plenty of water and soap, \(\rightarrow\) seek medical advice if necessary;
  - contact with eyes: \(\rightarrow\) immediately rinse with plenty of water (min. 10 minutes), \(\rightarrow\) seek medical advice;
  - ingestion: \(\rightarrow\) rinse mouth with plenty of water, \(\rightarrow\) if feeling unwell, immediately seek medical advice.

Legitimate Use:
In the manufacture of bronchodilatators.

Illicit Use:
In the clandestine synthesis of metamfetamine. (also see annex)
**ERGOMETRINE**

**Molecular Formula:** $\text{C}_{19}\text{H}_{23}\text{N}_{3}\text{O}_{2}$

**Molecular Weight:**
- base: 325.39
- hydrochloride: $\text{C}_{19}\text{H}_{23}\text{N}_{3}\text{O}_{2} \cdot \text{HCl}$ 361.85
- maleate: $\text{C}_{19}\text{H}_{23}\text{N}_{3}\text{O}_{2} \cdot \text{C}_{4}\text{H}_{4}\text{O}_{4}$ 441.46
- oxalate: $\text{C}_{19}\text{H}_{23}\text{N}_{3}\text{O}_{2} \cdot \text{C}_{2}\text{H}_{2}\text{O}_{4}$ 395.43
- tartrate: $(\text{C}_{19}\text{H}_{23}\text{N}_{3}\text{O}_{2})_{2} \cdot \text{C}_{4}\text{H}_{6}\text{O}_{6}$ 800.87

**International Control:** Table I, 1988 Convention.

**Harmonized System Number**

<table>
<thead>
<tr>
<th></th>
<th>Harmonized System Number</th>
<th>Adjusted Harmonized System Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>base</td>
<td>2939.60.0000</td>
<td>base: 2939.60.1000</td>
</tr>
<tr>
<td>hydrochloride</td>
<td>2939.60.0000</td>
<td>hydrochloride: 2939.60.1001</td>
</tr>
<tr>
<td>maleate</td>
<td>2939.60.0000</td>
<td>maleate: 2939.60.1002</td>
</tr>
<tr>
<td>oxalate</td>
<td>2939.60.0000</td>
<td>oxalate: 2939.60.1003</td>
</tr>
<tr>
<td>tartrate</td>
<td>2939.60.0000</td>
<td>tartrate: 2939.60.1004</td>
</tr>
</tbody>
</table>

**Other Names:**

base:
- Acide lysergique 2-hydroxy-1-methyléthylamide
- Acide lysergique 2-propanolamide
- $[8\alpha(S)]$-9,10-Didehydro-N-(2-hydroxy-1-methylethyl)-6-methylergoline-8-carboxamide
- 9,10-Didehydro-N-[(S)-2-hydroxy-1-methyl-6-methylergoline-8-carboxamide
- 9,10-Didehydro-N-(2-hydroxy-1-methyl-6-methylergoline-8-carboxamide
- Ergoatetrine
- Ergobasine
- Ergoklinine
- Ergoline-8-carboxamide, 9,10 didehydro-N-(2-hydroxy-1-methyl-6-methyl-
- Ergoline-8-carboxamide, 9,10-didehydro-N-(2-hydroxy-1-methyl-6-methyl-
- Ergometrinin
- Ergometrinum
- Ergonomine
- Ergostetrine
- Ergotocine
- Hydroxymethyllysergamide
- N-(2-Hydroxy-1-methyl-6-methyl)-D(+)-lysergamide
- N-[(S)-2-Hydroxy-1-methyl]lysergamide
- N-[(S)-2-Hydroxy-1-methyl]-D-lysergamide
- N-[(1-Hydroxyethyl)-D-lysergamide
- N-[(1-Hydroxymethyl)ethyl]-D-lysergamide
Hydroxypropyllysergamide
$D(+)$-Lysergic acid $\alpha$-hydroxyisopropylamide
$D$-Lysergic acid 1-(hydroxymethyl)ethylamide
Lysergic acid propanolamide
$D$-Lysergic acid 1,2-propanolamide
$D$-Lysergic acid $L$-2-propanolamide
$Dextro$-Lysergic acid $levo$-2-propanolamide
Margonovine
Secacornine

**maleate:**
Arconovina
Cornoventin
Cryovinal
9,10-Didehydro-$N$-[(S)-2-hydroxy-1-methylethyl]-6-methylergoline-
-8$\alpha$-carboxamide maleate (1:1)
Ergofar
Ergoline-8-carboxamide, 9,10-didehydro-$N$-(2-hydroxy-1-methylethyl)-
-6-methyl-, [8$\alpha$(S)], (Z)-2-butenedioate (1:1)
Ergomal
Ergomed
Ergomet
Ergometrina maleato
Ergométrine (maléate d')
Ergometrine Maleate
Ergometrinhydrogenmaleat
Ergometrini hydrogenomaleas
Ergometrini maleas
Ergometrinium hydrogenmaleinicum
Ergometrinium hydrogenmaleinicum
Ergometrinium maleicium
Ergomine
Ergonovine Bimaleate
Ergonovine Maleate
Ergostabil
Ergoton-B
Ergotrate
Ergotrate Maleate
Ermalate
Ermetrin, -e
Hemogen
$(6aR,9R)-4,6,6a,7,8,9$-Hexahydro-$N$-[(2$S$)-1-hydroxyprop-2-yl]-
-7-methylindolo[4,3-fg]quinoline-9-carboxamide
$(+)-N$-[(2$S$)-1-Hydroxyprop-2-yl]-$D$-lysergamide
Margonovine
Metriclavin
Metrisanol
Novergo

Panergal
Seometrine
Syntometrine
Takimetrin
Uteron
tartrate:
Basergin
Ergomar "Nordson"
Ergobasine tartrate
Ergonovine tartrate
Ergonovinum tartaricum
Ergostetrine tartrate
Ergotocine tartrate
Neofemergen
Neo-Femergin

Physical Appearance:

base: Tends to form solvated colourless crystals.
hydrochloride: Needles.
maleate: White or yellowish, odourless, crystalline powder.
tartrate: White or slightly reddish yellow crystals.

Chemical/Physical Properties:

<table>
<thead>
<tr>
<th>Melting Point:</th>
</tr>
</thead>
<tbody>
<tr>
<td>base: 162°C</td>
</tr>
<tr>
<td>hydrochloride: 246°C (decomposition)</td>
</tr>
<tr>
<td>maleate: 167°C</td>
</tr>
<tr>
<td>oxalate: 193°C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Solubility:</th>
</tr>
</thead>
<tbody>
<tr>
<td>base: Freely soluble in lower alcohols, ethyl acetate, acetone, slightly soluble in water and chloroform.</td>
</tr>
<tr>
<td>hydrochloride: Partly soluble in water.</td>
</tr>
<tr>
<td>maleate: Slightly soluble in water, scarcely soluble in ethanol, almost insoluble in chloroform and ethyl ether.</td>
</tr>
<tr>
<td>tartrate: Soluble in water and ethanol, slightly soluble in chloroform and ethyl ether.</td>
</tr>
</tbody>
</table>
!!! SAFETY WARNING !!!

- highly toxic
- Ingestion results in vomiting, diarrhoea, unquenchable thirst, confusion and unconsciousness.
- Chronic poisoning arises from ingestion of grain contaminated with ergot.

STORAGE/HANDLING

- Store in tightly closed amber-coloured containers in cool, dry areas and at a temperature of 2°C to 8°C.
- Handle at a well ventilate place.
- Wear safety goggles, gloves and a dust mask.
- Avoid contact with skin and eyes.
- Do not eat, drink or smoke while handling the substance.

- In case of:
  - contact with skin: → remove contaminated clothing,
    → wash with plenty of water and soap,
    → seek medical advice if necessary;
  - contact with eyes: → immediately rinse with plenty of water (min. 10 minutes),
    → seek medical advice;
  - ingestion: → rinse mouth with plenty of water,
    → if feeling unwell, immediately seek medical advice.

Legitimate Use:

Oxytoxic for obstetrical use and vasoconstrictor in the treatment of migraine.

Illicit Use:

In the clandestine manufacture of lysergic acid and LSD. (also see annex)
ERGOTAMINE

Molecular Formula: Molecular Weight:

- base: \( \text{C}_{33}\text{H}_{35}\text{N}_{5}\text{O}_{5} \) \( 581.65 \)
- hydrochloride: \( \text{C}_{33}\text{H}_{35}\text{N}_{5}\text{O}_{5}\cdot\text{HCl} \) \( 618.11 \)
- succinate: \( (\text{C}_{33}\text{H}_{35}\text{N}_{5}\text{O}_{5})_{2}\cdot\text{C}_{4}\text{H}_{6}\text{O}_{4} \) \( 1281.39 \)
- tartrate: \( (\text{C}_{33}\text{H}_{35}\text{N}_{5}\text{O}_{5})_{2}\cdot\text{C}_{4}\text{H}_{6}\text{O}_{6} \) \( 1313.39 \)

International Control: Table I, 1988 Convention.

Harmonized System Number*: Adjusted Harmonized System Number**:

- base: 2939.60.0000 base: 2939.60.2000
- hydrochloride: 2939.60.0000 hydrochloride: 2939.60.2001
- succinate: 2939.60.0000 succinate: 2939.60.2002
- tartrate: 2939.60.0000 tartrate: 2939.60.2003

Other Names:

base:

- \( \text{N}-(5-(\text{Benzyl}-10\text{b}-\text{hydroxy}-2\text{-methyl})-3,6\text{-dioxoperhydrooxazolo}(3,2-\text{a})\text{pyrrolo-}(2,1-\text{c})\text{pyrazin}-2\text{-yl})-\text{D}-\text{lysergamide} \)
- 5'-\text{Benzy1}-12'-\text{hydroxy}-2'-\text{methyl}ergotaman-3',6',18-trione
- Ergotaman-3',6',18-trione, 12'-\text{hydroxy}-2'-\text{methyl}-5'-\text{phenylmethyl}-ergotaman-3',6',18-trione
- 12'-\text{Hydroxy}-2'-\text{methyl}-5'(\text{phenylmethyl})-ergotaman-3',6',18-trione
- \( (5'S)-12'-\text{Hydroxy}-2'-\text{methyl}-3',6',18\text{-trioxo-5-benzylergotaman} \)

succinate:

- Ergoton-A

tartrate:

- Avetol
- Bellergal
- Cafergot
- Cornutamin
- Effergot
- Ergkatal
- Ergocaf
- Ergo Caffèin
- Ergomar
- Ergostat
- Ergotamina tartrato
Ergotamine (tartrate d')
Ergotamine tartrate
Ergotamini tartras
Ergotaminium tartaricum
Ergotamintartrat
Ergotaminium tartaricum
Ergotan
Ergotartrat
Ergotatropin
Exmigra
Exmigrex
Femergin
Gynergeen
Gynergen
Lanatrate
Lingraine
Lingrán
Lingrene
Medihaler-Ergotamine
Migral Rigetamine
Migretamine
Migril
Migwell
Secagyn
Secupan
Wigraine

Physical Appearance:

base: Very hygroscopic crystals.
hydrochloride: Crystals (small rectangular plates).
tartrate: Slightly hygroscopic, colourless, odourless crystals or a white or yellowish white crystalline powder.

Chemical/Physical Properties:

Melting Point:

base: 212 - 214°C (decomposition)
hydrochloride: 212°C (decomposition)
tartrate: 203°C (decomposition)

Solubility:

base: Freely soluble in chloroform, pyridine and glacial acetic acid, moderately soluble in ethyl acetate, slightly in benzene and ethanol, almost insoluble in water and petroleum ether.
hydrochloride: Soluble in water-alcohol mixtures, sparingly soluble in water or alcohol.
tartrate: Slightly soluble in water and alcohol, almost insoluble in ethyl ether and chloroform.

!!! SAFETY WARNING !!!

- highly toxic
- Ingestion results in vomiting, diarrhoea, unquenchable thirst, confusion and unconsciousness.
- Chronic poisoning arises from ingestion of grain contaminated with ergot.

STORAGE/HANDLING

- Store in tightly closed amber-coloured containers in cool, dry areas and at a temperature of 2 °C to 8 °C.
- Handle at a well ventilate place.
- Wear safety goggles, gloves and a dust mask.
- Avoid contact with skin and eyes.
- Do not eat, drink or smoke while handling the substance.

- In case of:
  
  **contact with skin:** → remove contaminated clothing,  
  → wash with plenty of water and soap,  
  → seek medical advice if necessary;

  **contact with eyes:** → immediately rinse with plenty of water (min. 10 minutes),  
  → seek medical advice;

  **ingestion:** → rinse mouth with plenty of water,  
  → if feeling unwell, immediately seek medical advice.

Legitimate Use:

Ergotamine tartrate is used in the treatment of acute attacks of migraine and as an oxytocic in obstetrics.
Illicit Use:

In the clandestine manufacture of lysergic acid and LSD. (also see annex)
ETHYL ETHER

Molecular Formula: \( \text{C}_4\text{H}_{10}\text{O} \)  
Molecular Weight: 74.12

International Control: Table II, 1988 Convention

Harmonized System Number*: 2909.11.0000

Other Names: Aether anaestheticus  Ether
Anaesthetic ether  Ether anesthésique
Anesthesia ether  Ether éthylique
Anesthetic ether  Ether pro narcosi
Diäthyläther  Ether sulfurique
Diethoxyethane  Ethoxyethane
Diethyl ether  Ethyl oxide
Diethyl oxide  Etoxietano
Dioxyde d'éthyle  3-Oxapentane
Dwuetlyowy eter  1,1'-Oxybisethane
Etare dietilico  1,1'-Oxybis [ethane]
Etare etilico  Oxyde d'éthyle
Eter etilico  Pronarcol
Eter sulfúrico  RCRA Waste Number U117
Ethane, 1,1'-oxybis-  Solvent ether
Ethane oxyéthane  Sulfuric ether

Physical Appearance:

Colourless mobile volatile liquid with a sweet pungent odour and burning taste.

Chemical/Physical Properties:

Melting Point: -116.2°C  
Boiling Point: 34.6°C

Density (g/cm³, 20°C): 0.7138

Solubility: Miscible with chloroform, ethanol and fatty oils; soluble in water.

!!! SAFETY WARNING !!!

- EXTREMELY FLAMMABLE
- may form explosive peroxides
- mildly toxic by inhalation, moderately toxic by ingestion
- skin and severe eye irritant
STORAGE/HANDLING

- Store in well-closed containers at a well-ventilated, cool, dark, fireproof place.
- Separate from oxidants.

- Keep away from open flame and sparks - NO SMOKING.
- DO NOT empty into drains.
- Take precautionary measures against static discharge.
- Handle at a well ventilate place, under a hood or with respiratory protection.
- Wear safety goggles and gloves.

- In case of:
  
  **inhalation:** → fresh air, rest,
  → seek medical advice;

  **contact with skin:** → remove contaminated clothing,

  → in case of frostbite DO NOT remove contaminated clothing,
  → flush skin with plenty of water or shower,
  → seek medical advice if necessary;

  **contact with eyes:** → immediately rinse with plenty of water (min. 10 minutes),
  → seek medical advice;

  **ingestion:** → drink a lot of water,

→ DO NOT induce vomiting,
→ immediately seek medical advice.

Legitimate Use:

Commonly used solvent in chemical laboratories and chemical/pharmaceutical industry, mainly as extractant for fats, oils, waxes, resins; for the manufacture of munitions, plastics, perfumes; in medicine as a general anesthetic (obsolete).

Illicit Use:

Solvent which can be used in the clandestine manufacture of heroin, cocaine, LSD, amfetamines, tryptamines (DET, DMT), mescaline, methadone and methaqualone. (also see annex)
ETHYLIDENE DIACETATE

Molecular Formula: C₆H₁₀O₄  Molecular Weight: 146.14

International Control: Not under International Control

Other Names:
- Äthylidendiacetat
- Diacétate d'éthylidène
- 1,1-Diacetoxyethane
- 1,1-Ethanediol diacetate
- 1,1-Ethanediol, diacetate

Physical Appearance:

Colourless liquid with a sharp, fruity odour.

Chemical/Physical Properties:

Melting Point: 19°C  Boiling Point: 169°C

Density (g/cm³, 20°C): 1.070

Solubility: Slightly soluble in water, miscible with alcohol.

!!!!! SAFETY WARNING !!!!!

- skin and eye irritant
- can react vigorously with strong oxidants
STORAGE/HANDLING

- Store at room temperature.
- Separate from oxidants.

- Handle at a well ventilate place, under a hood or with respiratory protection.
- Wear safety goggles and gloves.

- In case of:
  - **inhalation:** → fresh air, rest, → seek medical advice;
  - **contact with skin:** → remove contaminated clothing, → wash with plenty of water and soap, → seek medical advice if necessary;
  - **contact with eyes:** → immediately rinse with plenty of water (min. 10 minutes), → seek medical advice;
  - **ingestion:** → drink a lot of water, → seek medical advice.

Legitimate Use:

Agricultural fungicide; intermediate in the production of vinyl acetate.

Illicit Use:

In the clandestine manufacture of heroin. (also see annex)
HYDROCHLORIC ACID

Molecular Formula: HCl  Molecular Weight: 36.46

International Control: Table II, 1988 Convention

Harmonized System Number*: 2805.10.0000

Other Names: Acide chlorhydrique
Acido clorhidrico
Acido cloridrico
Acidum hydrochloricum
Acidum hydrochloricum concentratum
Chlorhydric acid
Chlorowodor
Chloorwaterstof
Chlorwasserstoff
Concentrated hydrochloric acid
Hydrogen chloride
Muriatic acid
Salzsäure
Spirit of salt

Physical Appearance:

Clear, colourless to light yellow fuming liquid with a pungent odour.

Chemical/Physical Properties:

- Melting Point: -35°C
- Boiling Point: 85°C (32% HCl)
- Density (g/cm³, 20°C): 1.16 (32% HCl)
- Solubility: Miscible with water and alcohol.

!!! SAFETY WARNING !!!

- strongly corrosive
- vapours irritant to the mucous membranes, to the eyes and the respiratory tract
- More severe exposures result in pulmonary edema.
STORAGE/HANDLING

- Store below 30 °C in airtight containers of glass or other inert material.
- Separate from oxidants and strong bases.
- Handle at a well ventilate place, under a hood or with respiratory protection.
- Wear safety goggles or a face shield, protective clothing and gloves.

- In case of:
  - **inhalation:** → fresh air, rest, place in half-sitting position, → seek medical advice;
  - **contact with skin:** → remove contaminated clothing, → flush skin with plenty of water or shower, → seek medical advice;
  - **contact with eyes:** → immediately rinse with plenty of water (min. 10 minutes), → immediately seek medical advice;
  - **ingestion:** → drink a lot of water,
    → **DO NOT** induce vomiting,
    → immediately seek medical advice.

Legitimate Use:

In the production of chlorides and hydrochlorides; for the neutralization of basic systems; as a catalyst and solvent in organic syntheses, in the cleaning of metal products.

Illicit Use:

In the clandestine manufacture of heroin hydrochloride and of other controlled substances such as amfetamine, phencyclidine (PCP), fentanyl and their analogues; cocaine, methaqualone, mecloqualone, mescaline, LSD, psilocine, diethyltryptamine (DET) and PEPAP. (also see annex)
**ISOSAFROLE**

**Molecular Formula:** C₁₀H₁₀O₂  
**Molecular Weight:** 162.18

**International Control:** Table I, 1988 Convention.

**Harmonized System Number**: 2932.90.4100  
**Adjusted Harmonized System Number**: 2932.90.4101

**Other Names:** Benzene, 1,2-(methylenedioxy)-4-propenyl-  
1,3-Benzodioxole, 5-(1-propenyl)-  
1,2-(Methylenedioxy)-4-propenylbenzene  
3,4-(Methylenedioxy)-1-propenylbenzene  
5-(1-Propenyl)-1,3-benzodioxole  
4-Propenylecatechol methylene ether  
4-Propenyl-1,2-methylenedioxybenzene

**Physical Appearance:**

Colourless, viscous liquid with a sweet, anise-like odour.

**Chemical/Physical Properties:**

**Melting Point:**

<table>
<thead>
<tr>
<th>Isomer</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>trans</td>
<td>8.2°C</td>
</tr>
<tr>
<td>cis</td>
<td>-21.5°C</td>
</tr>
</tbody>
</table>

**Boiling Point:**

<table>
<thead>
<tr>
<th>Isomer</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>trans</td>
<td>250 - 254°C; 85 - 86°C at 3.5 mm Hg</td>
</tr>
<tr>
<td>cis</td>
<td>77 - 79°C at 3.5 mm Hg</td>
</tr>
</tbody>
</table>

**Density:** (g/cm³, 20°C): 1.1224

**Solubility:** Soluble in ethanol, ethyl ether and benzene; insoluble in water.

---

### SAFETY WARNING

- **moderately toxic by ingestion**
- **poisonous by parenteral routes**
- **experimental carcinogen and tumorigen**
- **skin irritant**
- **When heated to decomposition, isosafrole emits acrid smoke and fumes.**
STORAGE/HANDLING

- Keep in cool place protected from light.
- Handle at a well ventilate place, under a hood or with respiratory protection.
- Wear safety goggles and gloves.

- In case of:
  - inhalation: → fresh air, rest,
    → seek medical advice;
  - contact with skin: → remove contaminated clothing,
    → wash with plenty of water and soap,
    → seek medical advice if necessary;
  - contact with eyes: → immediately rinse with plenty of water (min. 10 minutes),
    → seek medical advice;
  - ingestion: → drink a lot of water,
    → seek medical advice.

Legitimate Use:

In the manufacture of piperonal; to modify oriental perfumes; to strengthen soap perfumes; in small quantities together with methyl salicylate in root beer and sarsaparilla flavours; also used as a pesticide.

Illicit Use:

In the clandestine synthesis of tenamfetamine (MDA), N-ethyltenamfetamine (MDE), 3,4-methylenedioxymetamfetamine (MDMA), N-hydroxytenamfetamine (N-OH MDA).
(Also see annex)
LYSERGIC ACID

**Molecular Formula:** C_{16}H_{16}N_{2}O_{2}  
**Molecular Weight:** 268.32

**International Control:** Table I, 1988 Convention.

**Harmonized System Number:** 2939.60.0000

**Other Names:**
- Acide ergoline-8-[â]-carboxylique, didéhydro-9,10 méthyl-6
- Acide indolo(4,3-[fg])quinoline ergoline-8-carboxylique
- Acide lysergique (8-[â]-9,10-Didehydro-6-methylergoline-8-carboxylic acid
- 9,10-Didehydro-6-methylergoline-8-[â]-carboxylic acid
- Ergoline-8-[â]-carboxylic acid, 9-10-didehydro-6-methyl- (+)-Lysergic acid
- D(+)-Lysergic acid
- D-Lysergic aicd
- d-Lysergic acid

**Physical Appearance:**

Crystal plates or white crystalline powder.

**Chemical/Physical Properties:**

- **Melting Point:** 240°C (decomposition)
- **Solubility:** Moderately soluble in pyridine, sparingly soluble in water and in neutral organic solvents, soluble in alkali and acid solutions.

!!! SAFETY WARNING !!!

- highly toxic
- Ingestion results in vomiting, diarrhoea, unquenchable thirst, confusion and unconsciousness.
STORAGE/HANDLING

- Store in tightly closed containers in a cool place, protected from light.
- Handle at a well ventilate place.
- Wear safety goggles, gloves and a dust mask.
- Avoid contact with skin and eyes.
- Do not eat, drink or smoke while handling the substance.

- In case of:
  - **contact with skin:** → remove contaminated clothing,
    → wash with plenty of water and soap,
    → seek medical advice if necessary;
  - **contact with eyes:** → immediately rinse with plenty of water (min. 10 minutes),
    → seek medical advice;
  - **ingestion:** → rinse mouth with plenty of water,
    → if feeling unwell, immediately seek medical advice.

Legitimate Use:

In organic syntheses.

Illicit Use:

In the clandestine manufacture of LSD. (also see annex)
3,4-METHYLENEDIOXY-PHENYL-2-PROPANONE

Molecular Formula: \( \text{C}_{10}\text{H}_{10}\text{O}_{3} \)  
Molecular Weight: 178.19

International Control: Table I, 1988 Convention.

Harmonized System Number*: Adjusted Harmonized System Number**:  
2932.90.4100    2932.90.4103

Other Names: 5-Acetonyl-1,3-benzodioxole  
1-(Acetonyl)-3,4-methylenedioxybenzene  
1-(1,3-Benzodioxol-5-yl)-2-propanone  
1,3-Benzodioxol-5-ylpropan-2-one  
3,4-MDP-2-P  
MD-P2P  
3,4-Methylenedioxybenzyl methyl ketone  
3,4-Methylenedioxyphenylacetone  
3,4-Methylenedioxyphenyl-2-propanone  
1-(3,4-Methylenedioxyphenyl)-2-propanone  
Methyl piperonyl ketone  
Piperonalacetone  
Piperonyl methyl ketone  
PMK  
2-Propanone, 1-(1,3-benzodioxol-5-yl)-  
2-Propanone, 1-[3,4-(methyleneedioxy)phenyl]-  
2-Propanone, (3,4-(methyleneedioxy)phenyl)-

Physical Appearance:  
Liquid; odour of anise.

Chemical/Physical Properties:  
Boiling Point: 120 - 122°C  
Solubility: Soluble in most organic solvents; insoluble in water.

!!! SAFETY WARNING !!!
- irritating to skin and eyes
STORAGE/HANDLING

- Store in stainless steel or containers with a thin lining for long-term storage.
- For short term storage and transportation carbon steel containers are suitable.

- Handle at a well ventilate place, under a hood or with respiratory protection.
- Wear safety goggles and gloves.

- In case of:
  - inhalation: → fresh air, rest,
    → seek medical advice;
  - contact with skin: → remove contaminated clothing,
    → wash with plenty of water and soap,
    → seek medical advice if necessary;
  - contact with eyes: → immediately rinse with plenty of water (min. 10 minutes),
    → seek medical advice;
  - ingestion: → drink a lot of water,
    → immediately seek medical advice.

Legitimate Use:

In the manufacture of perfume components.

Illicit Use:

In the clandestine synthesis of tenamfetamine (MDA), N-ethyltenamfetamine (MDE),
3,4-methylenedioxymetamfetamine (MDMA), N-hydroxytenamfetamine (N-OH MDA).
(Also see annex)
METHYL ETHYL KETONE

Molecular Formula: C₄H₈O  Molecular Weight: 72.12

International Control: Table II, 1988 Convention

Harmonized System Number*: 2914.12.0000

Other Names: Acetonersatz
   Acetilmethylketon
   Butanone
   2-Butanone
   Butane-2-one
   Butanone-2
   3-Butanone
   Ethyl methyl cetone
   Ethylméthylecétone
   Ethylmethylketon
   Ethyl methyl ketone
   MEC
   MEETCO
   MEK
   Methyl acetone
   Méthyléthylecétone
   Methyléthylketon, -e
   Methylëthylketone
   Metyloetyloketone
   Metiletiletchetone
   Metyloetyleketone
   Ketobutan

Physical Appearance:
   Colourless liquid, with a fragrant mint-like moderately sharp odour.

Chemical/Physical Properties:

Melting Point: -86°C  Boiling Point: 79.6°C

Density (g/cm³, 20°C): 0.8054

Solubility: Miscible with water and many other organic solvents.
!!! SAFETY WARNING !!!
- highly flammable
- skin and severe eye irritant
- inhalation and ingestion produce headaches, dizziness and vomiting (less toxic than acetone)

STORAGE/HANDLING

- Store in closed containers, at a temperature not exceeding 15 °C.
- Keep containers in a well-ventilated place, away from heat, sparks and flames.
- Separate from oxidants.
- Keep away from open flame and sparks, no smoking.
- Handle at a well ventilate place, under a hood or with respiratory protection.
- Wear safety goggles and gloves.

- In case of:
  - **inhalation**: → fresh air, rest,
  → seek medical advice;
  - **contact with skin**: → remove contaminated clothing,
  → flush skin with plenty of water or shower,
  → seek medical advice if necessary;
  - **contact with eyes**: → immediately rinse with plenty of water (min. 10 minutes),
  → seek medical advice;
  - **ingestion**: → drink a lot of water,
  → DO NOT induce vomiting,
  → seek medical advice.

Legitimate Use:

In the manufacture of coatings, degreasing agents, lacquers, resins, and smokeless powders; commonly used solvent.

Illicit Use:

A solvent used in converting cocaine base to cocaine hydrochloride. (also see annex)
PHENYLACETIC ACID

Molecular Formula: C₈H₈O₂  Molecular Weight: 136.14

International Control: Table II, 1988 Convention,

Harmonized System Number*: 2916.33.1000

Other Names: Acide benzène acétique
               Acide phénylacétique
               Acide α-toluique
               Acido bencenoacético
               Acido fenilacético
               Acido α-toluico
               Benzeneacetic acid
               Fema No. 2878
               PAA
               2-Phenylacetic acid
               α-Phenylacetic acid
               omega-Phenylacetic acid
               Phenylessigsäure
               Phenylethanoic acid
               α-Toluic acid
               Toluyllic acid

Physical Appearance:

  White powder with a very disagreeable pungent odour.

Chemical/Physical Properties:

  Melting Point: 76.5°C  Boiling Point: 265.5°C

  Solubility: Soluble in ethyl ether and alcohol, slightly soluble in cold water;
              freely soluble in hot water.

!!! SAFETY WARNING !!!

- moderately toxic by ingestion, subcutaneous, and intraperitoneal routes
- experimental teratogen
- combustible when exposed to heat or flame
- When heated to decomposition it emits acrid smoke and irritating fumes.
STORAGE/HANDLING

- Store in dark bottles in a cool, dry area.
- Handle at a well ventilate place.
- Wear safety goggles, gloves and a dust mask.
- Avoid contact with skin and eyes.
- Do not eat, drink or smoke while handling the substance.

- In case of:
  - contact with skin: → remove contaminated clothing,
    → wash with plenty of water and soap,
    → seek medical advice if necessary;
  - contact with eyes: → immediately rinse with plenty of water (min. 10 minutes),
    → seek medical advice;
  - ingestion: → rinse mouth with plenty of water,
    → if feeling unwell, immediately seek medical advice.

Legitimate Use:

In chemical/pharmaceutical industry to manufacture phenylacetate esters, amfetamine and some of its derivatives; for the synthesis of a few penicillins; in fragrance applications and cleaning solutions.

Illicit Use:

In the clandestine synthesis of amfetamine, metamfetamine and 1-phenyl-2-propanone (P2P).
(also see annex)
1-PHENYL-2-PROPANONE

Molecular Formula: C₉H₁₀O  Molecular Weight: 134.18

International Control:  Table I, 1988 Convention

Harmonized System Number*: 2914.30.0000

Other Names: Benzyl methyl ketone
             BMK
             Methyl benzyl ketone
             Phenylacetone
             α-Phenylacetone
             Phenylmethyl methyl ketone
             Phenyl-2-propanone
             3-Phenyl-2-propanone
             P2P
             2-Propanone, 1-phenyl-

Physical Appearance:

Colourless or yellowish moderately viscous liquid.

Chemical/Physical Properties:

Melting Point: -15°C  Boiling Point: 100°C

Density (g/cm³, 20°C): 1.0157

Solubility: Miscible with organic solvents; insoluble in water.

!!! SAFETY WARNING !!!

- flammable
- irritating to skin and eyes.
STORAGE/HANDLING

- Store in tightly closed containers in a cool, dry area, protected from light.
- Keep away from open flame and sparks, no smoking.
- Handle at a well ventilate place, under a hood or with respiratory protection.
- Wear safety goggles and gloves.

- In case of:
  - **inhalation:** → fresh air, rest,
    → seek medical advice;
  - **contact with skin:** → remove contaminated clothing,
    → flush skin with plenty of water or shower,
    → seek medical advice if necessary;
  - **contact with eyes:** → immediately rinse with plenty of water (min. 10 minutes),
    → seek medical advice;
  - **ingestion:** → drink a lot of water,
    → seek medical advice.

Legitimate Use:

In chemical and pharmaceutical industry to manufacture amfetamine, metamfetamine and some of their derivatives; for synthesis of propylhexedrine; and a compound of a cleaning solution additive.

Illicit Use:

In the clandestine synthesis of amfetamine, metamfetamine and some of their derivatives.
(also see annex)
PHOSPHOROUS PENTACHLORIDE

Molecular Formula: $\text{PCl}_5 (= \text{Cl}_5\text{P})$  Molecular Weight: 208.24

International Control: Not under International Control

Other Names: Pentachlorure de phosphore
               Pentachloruro di fosforo
               Pentachlorophosphorane
               Phosphoric chloride
               Phosphoric perchloride
               Phosphorous, chloride, penta-
               Phosphorous perchloride
               Phosphorpentachlorid

Physical Appearance:

White to pale yellow, fuming, deliquesce, crystalline mass with an unpleasant,
pungent odour.

Chemical/Physical Properties:

   Melting Point: sublimation (148°C under pressure)  Boiling Point: 160°C

   Density (g/dm³, 296°C (gas)): 4.65

   Solubility: Soluble in carbon disulfide and carbon tetrachloride.
               It is decomposed by water and by alcohols.

!!!!! SAFETY WARNING !!!!!

- corrosive
- vapours/fumes irritating to the eyes and the respiratory tract
- More sever exposures to vapours/fumes result in pulmonary edema.
- reacts with air to form corrosive vapours
- reacts violently with water
- Many chemical reactions can cause fire and explosions.
STORAGE/HANDLING

- Keep in tightly closed containers in a dry place.
- Separate from strong bases.

- Handle at a well ventilate place, under a hood or with respiratory protection.
- Wear safety goggles or a face shield, protective clothing and gloves.

- In case of:
  - **inhalation:** → fresh air, rest, place in half-sitting position, → seek medical advice;
  - **contact with skin:** → remove contaminated clothing, → flush skin with plenty of water or shower, → seek medical advice;
  - **contact with eyes:** → immediately rinse with plenty of water (min. 10 minutes), → immediately seek medical advice;
  - **ingestion:** → drink a lot of water, → immediately seek medical advice.

- In case of fire in immediate vicinity, DO NOT use water-based extinguishers.

Legitimate Use:

Catalyst, e.g. in the manufacture of acetyl cellulose; chlorinating agent, particularly for converting acids into acid chlorides; dehydrating and phosphorylating agent.

Illicit Use:

In the clandestine manufacture of heroin; in the clandestine synthesis of mescaline and metamfetamine. (also see annex)
PHOSPHOROUS TRICHLORIDE

Molecular Formula: \( \text{PCl}_3 (= \text{Cl}_3\text{P}) \)  \hspace{1cm} \text{Molecular Weight: } 137.33

International Control: Not under International Control

Other Names: Chloride of phosphorous
Fosfortrichloride
Phosphorous chloride
Phosphorous, chloride, tri-
Phosphortrichlorid
Trichlorophosphine
Trichlorure de phosphore
Tricloruro di fosforo

Physical Appearance:

Colourless, clear, fuming liquid with a pungent odour.

Chemical/Physical Properties:

Melting Point: -112°C  \hspace{1cm} \text{Boiling Point: } 76°C

Density (g/cm\(^3\), 21°C): 1.574

Solubility: Soluble in benzene, chloroform, dichloromethane, ethyl ether, carbon tetrachloride, carbon disulfide.
It is decomposed by water and by alcohols.

!!!!! SAFETY WARNING !!!!!

- highly corrosive
- vapours/fumes irritating to the eyes and the respiratory tract
- More severe exposures result in pulmonary edema.
- reacts with air to form corrosive vapours
- reacts violently with water, alcohols, bases, nitric acid and reducing agents with the risk of fire and explosions
- When heated to decomposition it emits highly toxic fumes.
STORAGE/HANDLING

- Keep dry, under inert gas, in tightly closed containers.
- Separate from all other substances.
- Ventilate at floor level.

- Handle at a well ventilate place, under a hood or with respiratory protection.
- Wear safety goggles or a face shield, protective clothing and gloves.

- In case of:
  - **Inhalation:** → fresh air, rest, place in half-sitting position, → seek medical advice;
  - **Contact with skin:** → remove contaminated clothing, → flush skin with plenty of water or shower, → seek medical advice;
  - **Contact with eyes:** → immediately rinse with plenty of water (min. 10 minutes), → immediately seek medical advice;
  - **Ingestion:** → drink a lot of water, → immediately seek medical advice.

- In case of fire in immediate vicinity: DO NOT use water-based extinguishers.

Legitimate Use:

Chlorinating agent, especially to replace oxygen in organic compounds; phosphinylating agent; as solvent in cryoscopy; used in the manufacture of saccharin; etchant.

Illicit Use:

In the clandestine manufacture of heroin; in the clandestine synthesis of methaqualone and mecloqualone. (also see annex)
PIPERIDINE

Molecular Formula: $\text{C}_5\text{H}_{11}\text{N}$
Molecular Weight: 85.15

- base: $\text{C}_5\text{H}_{11}\text{N}$
- aurichloride: $\text{C}_5\text{H}_{11}\text{N}\cdot\text{HAuCl}_4$ 424.93
- bitartrate: $\text{C}_5\text{H}_{11}\text{N}\cdot\text{C}_4\text{H}_6\text{O}_6$ 229.94
- hydrochloride: $\text{C}_5\text{H}_{11}\text{N}\cdot\text{HCl}$ 121.61
- nitrate: $\text{C}_5\text{H}_{11}\text{N}\cdot\text{HNO}_3$ 147.97
- picrate: $\text{C}_5\text{H}_{11}\text{N}\cdot\text{C}_6\text{H}_3\text{N}_3\text{O}_7$ 314.26
- platinichloride: $(\text{C}_5\text{H}_{11}\text{N})_2\cdot\text{H}_2\text{PtCl}_6$ 580.12

International Control: Table II, 1988 Convention

Harmonized System Number*: Adjusted Harmonized System Number**:

- base: 2933.39.5000
- aurichloride: 2933.39.5001
- bitartrate: 2933.39.5002
- hydrochloride: 2933.39.5003
- nitrate: 2933.39.5004
- phosphate: 2933.39.5005
- picrate: 2933.39.5006
- platinichloride: 2933.39.5007
- thiocyanate: 2933.39.5008

Other Names: Azacyclohexane
Cyclopentimine
Cypentil
Hexahydropyridin, -e
Hexazane
Pentamethylenimin, -e
Perhdropyridine
Piperidin, -e

Physical Appearance:

- base: Colourless or yellowish liquid with intensive characteristic unpleasant odour.

Chemical/Physical Properties:

<table>
<thead>
<tr>
<th></th>
<th>Melting Point</th>
<th>Boiling Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>base:</td>
<td>$-10^\circ\text{C}$</td>
<td>106$^\circ\text{C}$</td>
</tr>
<tr>
<td>hydrochloride:</td>
<td>245 - 248$^\circ\text{C}$</td>
<td></td>
</tr>
<tr>
<td>nitrate:</td>
<td>110$^\circ\text{C}$</td>
<td></td>
</tr>
<tr>
<td>picrate:</td>
<td>150$^\circ\text{C}$ (decomposition)</td>
<td></td>
</tr>
</tbody>
</table>
Density (g/cm³, 20°C): base: 0.8606

Solubility:

base: miscible with water, soluble in most organic solvents.

!!! SAFETY WARNING !!!

- highly flammable
- corrosive
- toxic by inhalation and in contact with skin

STORAGE/HANDLING

- Store in tightly closed containers in a cool, dry and fireproof place.
- Separate from oxidants and acids.

- Keep away from open flame and sparks, no smoking.
- Handle at a well ventilate place, under a hood or with respiratory protection.
- Wear safety goggles or a face shield, protective clothing and gloves.

- In case of:
  - inhalation: → fresh air, rest, place in half-sitting position, → seek medical advice;

  - contact with skin: → remove contaminated clothing,
    → flush skin with plenty of water or shower,
    → seek medical advice;

  - contact with eyes: → immediately rinse with plenty of water (min. 10 minutes),
    → immediately seek medical advice;

  - ingestion: → drink a lot of water,
    → immediately seek medical advice.

Legitimate Use:

Commonly used solvent and reagent in chemical laboratories and chemical/pharmaceutical industry; also used in the manufacture of rubber products and plastics.
Illicit Use:

In the clandestine synthesis of phencyclidine (PCP) and tenocyclidine (TCP). (also see annex)

**PIPERONAL**

**Molecular Formula:** C₈H₆O₃  
**Molecular Weight:** 150.13

**International Control:** Table I, 1988 Convention

**Harmonized System Number**: 2932.90.4100  
**Adjusted Harmonized System Number**: 2932.90.4102

**Other Names:**
- 1,3-Benzodioxole-5-carboxaldehyde
- 3,4-Dihydroxybenzaldehyde methylene ketal
- 3,4-Dimethylenedioxybenzaldehyde
- Dioxymethyleneprotocatechuic aldehyde
- 5-Formyl-1,3-benzodioxole
- 5-Formylbenzodioxole
- Geliotropin
- Heliotropin
- 3,4-(Methylenedioxy)benzaldehyde
- Piperonaldehyde
- Piperonylaldehyde
- Protocatechuic aldehyde methylene ether

**Physical Appearance:**

Colourless, lustrous needle-shaped crystals, heliotrope odour.

**Chemical/Physical Properties:**

**Melting Point:** 37°C  
**Boiling Point:** 263°C

**Solubility:** Slightly soluble in water; freely soluble in ethanol and ethyl ether.

---

**!!! SAFETY WARNING !!!**

- *moderately toxic by ingestion and intraperitoneal routes*
- *can cause central nervous system depression*
- *irritant to skin*
- *combustible when exposed to heat or flame*
- can react with oxidizing materials

**STORAGE/HANDLING**

- Store at a cool place protected from light.
- Handle at a well ventilate place.
- Wear safety goggles, gloves and a dust mask.
- Avoid contact with skin and eyes.
- Do not eat, drink or smoke while handling the substance.

- In case of:
  - contact with skin: → remove contaminated clothing,
  → wash with plenty of water and soap,
  → seek medical advice if necessary;
  - contact with eyes: → immediately rinse with plenty of water (min. 10 minutes),
  → seek medical advice;
  - ingestion: → rinse mouth with plenty of water,
  → if feeling unwell, immediately seek medical advice.

**Legitimate Use:**

In perfumery, in cherry and vanilla flavours; in organic synthesis and as component for mosquito repellent.

**Illicit Use:**

In the clandestine synthesis of tenamfetamine (MDA), N-ethyltenamfetamine (MDE), 3,4-methylenedioxymetamfetamine (MDMA), N-hydroxytenamfetamine (N-OH MDA).

(Also see annex)
POTASSIUM PERMANGANATE

Molecular Formula: $\text{KMnO}_4$  
Molecular Weight: 158.03

International Control: Table II, 1988 Convention

Harmonized System Number*: 2841.60.0010

Other Names: Cairox  
Chameleon mineral  
Condy's crystals  
Kalii Permanganas  
Kaliumpermanganaat  
Kaliumpermanganat  
Permanganate de potassium  
Permanganate of potash  
Permanganato de potasio  
Permanganato di potassio  
Permaganic acid ($\text{HMnO}_4$), potassium salt

Physical Appearance:

Dark purple or bronze-like, odourless crystals. Almost opaque by transmitted light and of a blue metallic luster by reflected light. Sweet with a stringent aftertaste; stable in air.

Chemical/Physical Properties:

Melting Point: 240°C (decomposition)

Solubility: Soluble in water, decomposed by alcohol and other organic solvents.

!!! SAFETY WARNING !!!

- Explosions may occur in case of contact with organic or other oxidizable substances, in solution or in the dry state.
STORAGE/HANDLING

- Store in well closed containers (bottles and drums) at ambient temperature with open vents.
- Avoid contact with organic substances.

- Handle at a well ventilate place.
- Wear safety goggles, gloves and a dust mask.
- Avoid contact with skin and eyes.
- Do not eat, drink or smoke while handling the substance.

- In case of:
  - **inhalation:** → fresh air, rest, place in half-sitting position,
    → seek medical advice;
  - **contact with skin:** → remove contaminated clothing,
    → flush skin with plenty of water or shower,
    → seek medical advice;
  - **contact with eyes:** → immediately rinse with plenty of water (min. 10 minutes),
    → seek medical advice;
  - **ingestion:** → drink a lot of water,
    → immediately seek medical advice.

Legitimate Use:

Important reagent in analytical and synthetic organic chemistry. Bleaching applications, disinfectants, antibacterials and antifungal agents.

Illicit Use:

In the converting process of coca paste into cocaine base. (also see annex)
PSEUDOEPHEDRINE

Molecular Formula: \( \text{Molecular Weight:} \)

- base: \( C_{10}H_{15}NO \) 165.23
- hydrochloride: \( C_{10}H_{15}NO \cdot HCl \) 201.70
- sulfate: \( (C_{10}H_{15}NO)_2 \cdot H_2SO_4 \) 428.55

International Control: Table I, 1988 Convention

Harmonized System Number*: Adjusted Harmonized System Number**:

- base: 2939.40.1000
  - base: 2939.40.1000
  - \( d \)-\( \sigma \)-ephrine: 2939.40.1001
  - \( l \)-\( \sigma \)-ephrine: 2939.40.1002
  - \( dl \)-\( \sigma \)-ephrine: 2939.40.1003
- hydrochloride: 2939.40.1000
  - hydrochloride: 2939.40.1000
  - \( d \)-\( \sigma \)-ephrine: 2939.40.1004
  - \( l \)-\( \sigma \)-ephrine: 2939.40.1005
  - \( dl \)-\( \sigma \)-ephrine: 2939.40.1006
- sulfate: 2939.40.1000
  - sulfate: 2939.40.1007

Other Names:

- base:
  - Benzenemethanol, \( \text{\( \alpha \)} \)-[1-(methylamino)ethyl]-, \( [S-(R^*,R^*)]\)-
  - Ephedrin(e)
  - \( \sigma \)-Ephedrine
  - (-)-Ephedrin(e)
  - \( d \)-\( \sigma \)-Ephedrine
  - (+)-\( \sigma \)-Ephedrine
  - \( l \)-Ephedrine
  - \( L(+)\)-\( \sigma \)-Ephedrine
  - \( \text{trans} \)-Ephedrine
  - (-)-(1\(_R\),2\(_S\))-Ephedrine
  - (-)-\( \text{erythroid} \)-Ephedrine
  - 1\(_R\).2\(_S\)-\( \text{erythroid} \)-(\(-\))-Ephedrine
  - \( \alpha \)-Hydroxy-\( \alpha \)-methylaminopropylbenzene
  - Isoephrine
  - \( d \)-Isoephrine
  - \( \text{\( \alpha \)} \)-[1-(Methylamino)ethyl]benzene methanol
  - \( \text{\( \alpha \)} \)-[1-(Methylamino)ethyl]benzenemethanol
  - \( [S-(R^*,R^*)]\)-\( \text{\( \alpha \)} \)-[1-(Methylamino)ethyl]benzenemethanol
  - \( \text{\( \alpha \)} \)-[1-(Methylamino)ethyl]benzyl alcohol
2-Methylamino-1-phenyl-1-propanol

(+)2-methylamino-1-phenylpropan-1-ol
(1R,2S)-2-Methylamino-1-phenyl-1-propanol
(+)-(1S,2R)-2-(Methylamino)-1-phenyl-1-propanol
DL-threo-2-(Methylamino)-1-phenylpropan-1-ol
(1R,2S)-2-Methylamino-1-phenylpropan-1-ol hemihydrate
1-Phenyl-1-hydroxy-2-methylaminopropane
1-Phenyl-2-methylaminopropanol
1-Phenyl-2-methylamino-1-propanol
L-(+)-Pseudoephedrine
d-Pseudoephedrine
(+)-(1S,2S)-Pseudoephedrine
Sudafed

hydrochloride:
Actifed
Afrinol
Allent
Ambenyl-D
Atridine
Benafed
Benazma
Benylin
Brexin
Benzenemethanol, 1-(methylamino)ethyl], [S-(R,R)], hydrochloride
Cenafed
Congestac
Cytophenol
Daycare
Decofed
Deconamine
Decongestant Syrup
Dimacol
Dorcol
d-ø-Ephedrine hydrochloride
D-Feda
d-ø-Ephedrine hydrochloride
Eltor
Emprazil
Fedahist
Fedrazil
First Sign
Galpseud
Halofed
Histalet
(αR,αR)-α-Hydroxy-α-methylphenethyl-N-methylammonium chloride
(+)-(αS,αS)-α-Hydroxy-α-methylphenethyl-N-methylammonium chloride
Intensin
Isoclor
Isofedrin
Kronofed-A
Linctifed
(+)-(1S,2S)-2-Methyamino-1-phenylpropan-1-ol hydrochloride
Myfedrine
Naldegesic
Narixan
Nasa-12
Neofed
Novafed 120
Novahistine
Oranyl
Otrinol
Paragesic
PediaCare
Phenergan-D
Profedrine
(+)-Pseudoephedrine hydrochloride
Pseudofrin
Repedrina
Rhinalair
Robidrine
Robitussin
Ro-Fedrin
Rondec
Sancos Co
Seudotabs
Sinarest
Sine-Aid
Sine-Off
Sinufed
Sudafed
Sudanyl
Sudomyl
Sudelix
Sufedrin
Suolelix
Symptom 2
Triocos
Triphed
Tusaphed
Tussafed
Tussifed
Tylenol
Ursinus
Wal-Phed

resinate:

Pseudoephedrine Polistirex
sulfate: Afrinol
Benzenemethanol, \( \mathbf{\Delta} \)-[1-(methylamino)ethyl]-, \( \mathbf{[S-(R^*, R^*)]} \)-, sulfate (2:1)
Chlor-trimeton Decongestant
Congesteze
Disophrol
Drixora
Drixoral
Halin
Polaramine
(+-)Pseudoephedrine sulfate (2:1)

**Physical Appearance:**

- base: Crystals.
- hydrochloride: Needles.
- sulfate: White odourless crystals or crystalline powder.

**Chemical/Physical Properties:**

<table>
<thead>
<tr>
<th>Melting Point:</th>
</tr>
</thead>
<tbody>
<tr>
<td>base:</td>
</tr>
<tr>
<td>( (d)-isomer)</td>
</tr>
<tr>
<td>( (racer mate)</td>
</tr>
<tr>
<td>hydrochloride:</td>
</tr>
<tr>
<td>( (d)-isomer)</td>
</tr>
</tbody>
</table>

**Solubility:**

- base: Sparingly soluble in water, freely soluble in alcohol or ethyl ether.
- hydrochloride: Soluble in water, alcohol and chloroform.
- sulfate: Freely soluble in alcohol.

!!! SAFETY WARNING !!!

- Harmful if swallowed
- Do not breathe dust!
- Avoid contact with skin and eyes!
STORAGE/HANDLING

- Keep in well-closed containers, protected from light.
- Handle at a well ventilate place.
- Wear safety goggles, gloves and a dust mask.
- Avoid contact with skin and eyes.
- Do not eat, drink or smoke while handling the substance.

- In case of:
  contact with skin: → remove contaminated clothing,
  → wash with plenty of water and soap,
  → seek medical advice if necessary;
  contact with eyes: → immediately rinse with plenty of water (min. 10 minutes),
  → seek medical advice;
  ingestion: → rinse mouth with plenty of water,
  → if feeling unwell, immediately seek medical advice.

Legitimate Use:

In the manufacture of bronchodilatators and nasal decongestant.

Illicit Use:

In the clandestine synthesis of metamfetamine. (also see annex)
SAFROLE

Molecular Formula: $\text{C}_{10}\text{H}_{10}\text{O}_2$  \hspace{2cm} Molecular Weight: 162.18

International Control: Table I, 1988 Convention

Harmonized System Number*: 2932.90.3700

Other Names: 5-Allyl-1,3-benzodioxole
   Allylcatechol methylene ether
   Allyldioxybenzene methylene ether
   4-Allyl-1,2-methylenedioxybenzene
   4-Allyl-1,2-(methyleneoxy)benzene
   1-Allyl-3,4-methylenedioxybenzene
   $m$-Allylpyrocatechin methylene ether
   4-Allylpyrocatehol formaldehyde acetal
   Allylpyrocatehol methylene ether
   1,3-Benzodioxole, 5-(2-propenyl)-
   1,2-Methylenedioxy-4-allylbenzene
   3,4-Methylenedioxyallylbenzene
   5-(2-Propenyl)-1,3-benzodioxole
   Rhyuno oil
   Safrol
   Safrole MF
   Shikimole
   Shikomol

Physical Appearance:

   Colourless or slightly yellow liquid or crystals; sassafras odour.

Chemical/Physical Properties:

   Melting Point: 11°C  \hspace{2cm} Boiling Point: 235 - 237°C
   
   Density (g/cm³, 20°C): 1.1000

   Solubility: Insoluble in water, very soluble in alcohol, miscible with chloroform and ethyl ether.
!!! SAFETY WARNING !!!

- moderately toxic by ingestion
- poisonous by parenteral routes
- experimental carcinogen and neoplastigen
- irritant to skin
- combustible when exposed to heat or flame
- When heated to decomposition it emits acrid smoke and irritating fumes.

STORAGE/HANDLING

- Keep in a cool place protected from light.
- Handle at a well ventilate place, under a hood or with respiratory protection.
- Wear safety goggles and gloves.

- In case of:
  - **inhalation:** → fresh air, rest, → seek medical advice;
  - **contact with skin:** → remove contaminated clothing, → wash with plenty of water and soap, → seek medical advice if necessary;
  - **contact with eyes:** → immediately rinse with plenty of water (min. 10 minutes), → seek medical advice;
  - **ingestion:** → drink a lot of water, → seek medical advice.

Legitimate Use:

In perfumery, e.g. in manufacture of piperonal, denaturing fats in soap manufacture.

Illicit Use:

In the clandestine synthesis of tetramfetamine (MDA), N-ethyltetramfetamine (MDE), 3,4-methylenedioxymetamfetamine (MDMA), N-hydroxytenamfetamine (N-OH MDA). (also see annex)
SULFURIC ACID

Molecular Formula: H₂SO₄  Molecular Weight: 98.08

International Control: Table II, 1988 Convention

Harmonized System Number*: 2807.00.0000

Other Names: Acide sulfurique  Schwefelsäurelösungen
Acido sulfurico  Schwefelsäure
Bov  Spent sulfuric acid
Dipping acid  Spirit of Sulfur
Hydroot  Sulphuric acid
Hydrogen sulfate  Vitriol brown oil
Matting acid  Vitriol, oil of
Nordhausen acid  Zwavelzuurplossingen

Oil of Vitriol

Physical Appearance:

Clear, colourless, odourless oily liquid, more viscous than water.

Chemical/Physical Properties:

Melting Point: 10.5°C  Boiling Point: 290°C

Density (g/cm³, 20°C): 1.841

Solubility: Miscible with water and with alcohol.

!!! SAFETY WARNING !!!

- extremely corrosive to all body tissues
- Reacts with water or steam to produce heat.
STORAGE/HANDLING

- Store in airtight containers of glass or other inert material (unbreakable packaging if possible).
- Keep separate from combustible substances, reducing agents and bases.
- Ventilate at floor level.
- Handle at a well ventilate place, under a hood or with respiratory protection.
- Wear safety goggles or a face shield, protective clothing and gloves.
- UNDER NO CIRCUMSTANCES ADD WATER TO SULFURIC ACID.
  WHEN DILUTING ALWAYS ADD SULFURIC ACID TO WATER SLOWLY, STIRRING CONSTANTLY.

- In case of:
  inhalation: → fresh air, rest, place in half-sitting position, → seek medical advice;
  contact with skin: → remove contaminated clothing, → flush with plenty of water of shower, → seek medical advice;
  contact with eyes: → immediately rinse with plenty of water (min. 10 minutes), → immediately seek medical advice;
  ingestion: → drink a lot of water,
  → DO NOT induce vomiting,
  → immediately seek medical advice.

- In case of fire in immediate vicinity, DO NOT use water-based extinguishers.

Legitimate Use:

In the production of sulfates; as an acidic oxidizer, a dehydrating and purifying agent; for the neutralization of alkaline solutions; as a catalyst in organic synthesis, in the manufacture of fertilizers, explosives, dyestuffs, paper; as a component of drain and metal cleaners, anti-rust compounds and automobile battery fluids.

Illicit Use:

In the extraction process of coca leaves (leading to cocaine), in the conversion process of coca paste to cocaine base; in the production of sulfate salts of mescaline and morphine; in the clandestine synthesis of amfetamine and its derivatives, pethidine and MPPP. (also see annex)
THIONYL CHLORIDE

Molecular Formula: SOCl₂ (= Cl₂OS)  Molecular Weight: 118.97

International Control: Not under International Control

Other Names: Chlorure de thionyle
               Oxychlorure de soufre
               Sulfinyl chloride
               Sulfurous dichloride
               Sulfurous oxychloride
               Sulfur chloride oxide
               Sulfur oxychloride
               Thionylechlorid
               Thionyl dichloride

Physical Appearance:

    Colourless to pale yellow or reddish, fuming, refractive liquid with a suffocating, pungent odour.

Chemical/Physical Properties:

    Melting Point: -104.5°C  Boiling Point: 79°C

    Density (g/cm³, 20°C): 1.638

    Solubility: Miscible with benzene, chloroform, carbon tetrachloride.
                It is decomposed by water and by alcohols.

!!!!!! SAFETY WARNING !!!!!!

- strongly corrosive
- vapours/fumes corrosive to the eyes and the respiratory tract
- More severe exposures result in pulmonary edema.
- reacts with air to form corrosive fumes
- When heated to decomposition (≥ 140 °C) it emits toxic fumes.
- reacts violently with water, alcohols and many organic compounds with the risk of fire and explosions
STORAGE/HANDLING

- Keep in a dry, dark place.
- Separate from bases, alcohols and many other organic compounds.
- Handle at a well ventilate place, under a hood or with respiratory protection.
- Wear safety goggles or a face shield, protective clothing and gloves.
- In case of:

  inhalation: → fresh air, rest, place in half-sitting position, → seek medical advice;

  contact with skin: → remove contaminated clothing, → flush with plenty of water or shower, → seek medical advice;

  contact with eyes: → immediately rinse with plenty of water (min. 10 minutes), → immediately seek medical advice;

  ingestion: → drink a lot of water, → immediately seek medical advice.

Legitimate Use:

Chlorinating agent, especially to form acyl chlorides; chemical intermediate and catalyst.

Illicit Use:

In the clandestine manufacture of heroin; in the clandestine synthesis of mescaline, metamfetamine and pethidine. (also see annex)
TOLUENE

**Molecular Formula:** C\textsubscript{7}H\textsubscript{8}  
**Molecular Weight:** 92.13

**International Control:** Table II, 1988 Convention.

**Harmonized System Number:**  
2902.30.0000  
2707.20.0000

**Other Names:** Antisal 1a  
Benzene, methyl-  
Methacid, -e  
Methane, phenyl-  
Methyl benzene  
Methylbenzene  
Méthylbenzène  
Méthylphène  
Methylbenzol  
NCI-C07272  
Phenyl methane  
Phenylmethane  
Phénylméthane  
RCRA Waste Number U220  
Toluen  
Toluène  
Tolueen 
Tolu-sol  
Toluol  
Toluolo

**Physical Appearance:**

Mobile refractive colourless highly inflammable liquid with a benzene-like odour.

**Chemical/Physical Properties:**

**Melting Point:** -94.5°C  
**Boiling Point:** 110°C

**Density (g/cm\textsuperscript{3}, 20°C):** 0.8669

**Solubility:** Miscible with alcohol, chloroform, ethyl ether, benzene and glacial acetic acid. Slightly soluble in water.
!!! SAFETY WARNING !!!

- highly flammable
- moderately toxic by ingestion and inhalation
- Inhalation of higher doses results in headache, nausea, impairment of coordination and reaction time.
- skin and severe eye irritant
- experimental teratogen, mutation data reported
- incompatible with strong oxidants

STORAGE/HANDLING

- Store in airtight containers at a fireproof place.
- Separate from oxidants.
- Keep away from open flame and sparks, no smoking.
- Handle at a well ventilate place, under a hood or with respiratory protection.
- Wear safety goggles and gloves.

- In case of:
  - **inhalation:** → fresh air, rest,
  → seek medical advice;
  - **contact with skin:** → remove contaminated clothing,
  → wash with plenty of water and soap,
  → seek medical advice if necessary;
  - **contact with eyes:** → immediately rinse with plenty of water (min. 10 minutes),
  → seek medical advice;
  - **ingestion:** → drink a lot of water,
  → **DO NOT** induce vomiting,
  → immediately seek medical advice.

Legitimate Use:

In the manufacture of explosives, dyes, coatings, other organic substances and as a gasoline additive and industrial solvent.

Illicit Use:
A solvent used in the clandestine synthesis of controlled substances such as fentanyl, amphetamine, phencyclidine (PCP) and their analogues; methaqualone, mecloqualone, methadone, cocaine and psilocine. (also see annex)

REFERENCES

Chemical Safety Sheets;

Chemistry of Hazardous Materials, 2nd Edition;
E. Meyer;

Clandestine Laboratory Guide for Agents and Chemists;

Clandestine Manufacture of Substances under International Control - Manual for Use by National Law Enforcement Authorities and Personnel of Narcotics Laboratories (ST/NAR/10/Rev.1);

Clarke's Isolation and Identification of Drugs, 2nd Edition;
A.C. Moffat (Editor);

Cocaine HCl Solvents - Synonyms, Legal Use and Major Producers (Special Report);

CRC Handbook of Chemistry and Physics, 75th Edition;
D.R. Lide (Editor-in-Chief);

Dangerous Properties of Industrial Material, 7th Edition;
N.I. Sax, R.J. Lewis;

Handbook of Toxic and Hazardous Chemicals;
M. Sittig;

Hazardous Chemicals Desk Reference, 2nd Edition;
R.J. Lewis, Sr.;
Kirk-Othmer Encyclopedia of Chemical Technology, 3rd Edition;
H.F. Mark, D.F. Othmer, C.G. Overberger, G.T. Seaborg (Editorial Board);

Material Safety Data Sheets;
E.Merck, Darmstadt, Germany;
ICN Biochemicals, Aurora, Ohio, U.S.A..

Sybil P. Parker (Editor);

Precursor & Essential Chemicals Used in the Preparation of Clandestinely Produced Drugs;
U.S. Department of Justice, Drug Enforcement Administration, Office of Diversion

Prudent Practices for Handling Hazardous Chemicals in Laboratories;
Committee on Hazardous Substances in the Laboratory, Assembly of Mathematical and
Physical Sciences, National Research Council;

Reagent Chemicals, 7th Edition - American Chemical Society Specifications;

SH ("système harmonisé") - code douanier, inventaire douanier européen des substances
chimiques, guide pour la classification des produits chimiques dans la nomenclature
combinée;

The Dictionary of Substances and Their Effects, Vol. 1-7;
M.L.Richardson (Editor);

The Merck Index, 11th Edition;
S.Budavari (Editor);

W. Gerhartz (Executive Editor);

USA Notification and Supporting Documentation to Add 3,4-Methylenedioxyphenyl-
-2-propanone, N-Acetylanthranilic Acid, Hydrochloric Acid, Methyl Ethyl Ketone,
Piperonal, Potassium Permanganate, Toluene, Safrole, Isosafrole and Sulfuric Acid to
Table II of the Annex to the 1988 United Nations Convention against Illicit Traffic in
**ANNEX**

**Substances most frequently used in the illicit manufacture of drugs under international control**

**Table I**

<table>
<thead>
<tr>
<th>DRUGS UNDER INTERNATIONAL CONTROL</th>
<th>SUBSTANCES FREQUENTLY USED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heroin</td>
<td>Acetic acid</td>
</tr>
<tr>
<td></td>
<td>Acetic anhydride</td>
</tr>
<tr>
<td></td>
<td>Acetone</td>
</tr>
<tr>
<td></td>
<td>Acetyl chloride</td>
</tr>
<tr>
<td></td>
<td>Chloroform</td>
</tr>
<tr>
<td></td>
<td>Ethyl ether</td>
</tr>
<tr>
<td></td>
<td>Ethylidene diacetate</td>
</tr>
<tr>
<td></td>
<td>Hydrochloric acid</td>
</tr>
<tr>
<td></td>
<td>Methyl ethyl ketone</td>
</tr>
<tr>
<td></td>
<td>Phosphorous pentachloride</td>
</tr>
<tr>
<td></td>
<td>Phosphorous trichloride</td>
</tr>
<tr>
<td></td>
<td>Sulfuric acid</td>
</tr>
<tr>
<td></td>
<td>Thionyl chloride</td>
</tr>
<tr>
<td>Cocaine</td>
<td>Acetic acid</td>
</tr>
<tr>
<td></td>
<td>Acetic anhydride</td>
</tr>
<tr>
<td></td>
<td>Acetone</td>
</tr>
<tr>
<td></td>
<td>Chloroform</td>
</tr>
<tr>
<td></td>
<td>Ethyl ether</td>
</tr>
<tr>
<td></td>
<td>Hydrochloric acid</td>
</tr>
<tr>
<td></td>
<td>Methyl ethyl ketone</td>
</tr>
<tr>
<td></td>
<td>Potassium permanganate</td>
</tr>
<tr>
<td></td>
<td>Sulfuric acid</td>
</tr>
<tr>
<td></td>
<td>Toluene</td>
</tr>
<tr>
<td>Amfetamine, Metamfetamine</td>
<td>Acetic acid</td>
</tr>
<tr>
<td></td>
<td>Acetic anhydride</td>
</tr>
<tr>
<td></td>
<td>Acetone</td>
</tr>
<tr>
<td></td>
<td>Chloroform</td>
</tr>
<tr>
<td></td>
<td>Ephedrine</td>
</tr>
<tr>
<td></td>
<td>Ethyl ether</td>
</tr>
<tr>
<td></td>
<td>Hydrochloric acid</td>
</tr>
<tr>
<td></td>
<td>Phenylacetic acid</td>
</tr>
<tr>
<td></td>
<td>1-Phenyl-2-propanone</td>
</tr>
<tr>
<td></td>
<td>Phosphorous pentachloride</td>
</tr>
<tr>
<td></td>
<td>Pseudoephedrine</td>
</tr>
<tr>
<td></td>
<td>Sulfuric acid</td>
</tr>
<tr>
<td></td>
<td>Thionyl chloride</td>
</tr>
<tr>
<td></td>
<td>Toluene</td>
</tr>
<tr>
<td>Ring-Substituted Derivatives of Amfetamine and Metamfetamine</td>
<td>Acetic acid</td>
</tr>
<tr>
<td>(e.g. temamfetamine (MDA), 3,4-methylenedioxymetamfetamine (MDMA), brolamfetamine (DOB), 2,5-dimethoxyamphetamine (DMA))</td>
<td>Acetone</td>
</tr>
<tr>
<td></td>
<td>Chloroform</td>
</tr>
<tr>
<td></td>
<td>Ethyl ether</td>
</tr>
<tr>
<td></td>
<td>Hydrochloric acid</td>
</tr>
<tr>
<td></td>
<td>Isosafrole</td>
</tr>
<tr>
<td></td>
<td>3,4-Methylenedioxymethyl-2-propanone</td>
</tr>
<tr>
<td></td>
<td>Piperonal</td>
</tr>
<tr>
<td>DRUGS UNDER INTERNATIONAL CONTROL</td>
<td>SUBSTANCES FREQUENTLY USED</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Safrole</td>
<td>Sulfuric acid</td>
</tr>
<tr>
<td>Toluene</td>
<td></td>
</tr>
<tr>
<td>(++)-Lysergide (LSD)</td>
<td>Acetone</td>
</tr>
<tr>
<td></td>
<td>Chloroform</td>
</tr>
<tr>
<td></td>
<td>Ergometrine</td>
</tr>
<tr>
<td></td>
<td>Ergotamine</td>
</tr>
<tr>
<td></td>
<td>Ethyl ether</td>
</tr>
<tr>
<td></td>
<td>Hydrochloric acid</td>
</tr>
<tr>
<td></td>
<td>Lysergic acid</td>
</tr>
<tr>
<td>Methaqualone, Mecloqualone</td>
<td>Acetic anhydride</td>
</tr>
<tr>
<td></td>
<td>N-Acetylanthranilic acid</td>
</tr>
<tr>
<td></td>
<td>Anthranilic acid</td>
</tr>
<tr>
<td></td>
<td>Chloroform</td>
</tr>
<tr>
<td></td>
<td>Ethyl ether</td>
</tr>
<tr>
<td></td>
<td>Hydrochloric acid</td>
</tr>
<tr>
<td></td>
<td>Phosphorous trichloride</td>
</tr>
<tr>
<td></td>
<td>Toluene</td>
</tr>
<tr>
<td>SUBSTANCES FREQUENTLY USED</td>
<td>Heroin</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Acetic acid</td>
<td>X</td>
</tr>
<tr>
<td>Acetic anhydride</td>
<td>X</td>
</tr>
<tr>
<td>Acetone</td>
<td>X</td>
</tr>
<tr>
<td>N-Acetylanthranilic acid</td>
<td></td>
</tr>
<tr>
<td>Acetyl chloride</td>
<td>X</td>
</tr>
<tr>
<td>Anthranilic acid</td>
<td></td>
</tr>
<tr>
<td>Chloroform</td>
<td>X</td>
</tr>
<tr>
<td>Ephedrine</td>
<td></td>
</tr>
<tr>
<td>Ergometrine</td>
<td></td>
</tr>
<tr>
<td>Ergotamine</td>
<td></td>
</tr>
<tr>
<td>Ethyl ether</td>
<td>X</td>
</tr>
<tr>
<td>Ethylidene diacetate</td>
<td>X</td>
</tr>
<tr>
<td>Hydrochloric acid</td>
<td>X</td>
</tr>
<tr>
<td>Isosafrole</td>
<td></td>
</tr>
<tr>
<td>Lysergic acid</td>
<td></td>
</tr>
</tbody>
</table>

* Miscellaneous substances that are not under international control.
<table>
<thead>
<tr>
<th>SUBSTANCES FREQUENTLY USED</th>
<th>Heroin</th>
<th>Cocaine</th>
<th>Amphetamine Metamfetamine</th>
<th>Ring-substituted derivatives of amphetamine and metamfetamine</th>
<th>(+)-Lysergide (LSD)</th>
<th>Methaqualone, Mecloqualone</th>
<th>Miscellaneous *</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,4-Methylenedioxyphenyl-2-propanone</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methyl ethyl ketone</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phenylacetic acid</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-Phenyl-2-propanone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phosphorous pentachloride</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>X (3)</td>
<td></td>
</tr>
<tr>
<td>Phosphorous trichloride</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X (3)</td>
<td></td>
</tr>
<tr>
<td>Piperidine</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X (1)</td>
<td></td>
</tr>
<tr>
<td>Piperonal</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potassium permanganate</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pseudoephedrine</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safrole</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulfuric acid</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X (3,7)</td>
<td></td>
</tr>
<tr>
<td>Thionyl chloride</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X (3,7)</td>
<td></td>
</tr>
<tr>
<td>Toluene</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X (1,2,4,6)</td>
<td></td>
</tr>
</tbody>
</table>
* 1 = Phencyclidine (PCP) and its analogues
  2 = Fentanyl and its derivatives and analogues
  3 = Mescaline
  4 = Psilocine
  5 = DET (N,N-diethyltryptamine) and DMT (N,N-dimethyltryptamine)
  6 = Methadone
  7 = Pethidine and MPPP (1-methyl-4-phenyl-4-propionoxypiperidine)
  8 = PEPAP (1-(2-phenylethyl)-4-phenyl-4-acetyloxypiperidine)