INTERNATIONAL NARCOTICS CONTROL BOARD

Precursors

and chemicals frequently used in the illicit manufacture of narcotic drugs and psychotropic substances

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The *Report of the International Narcotics Control Board for 2022* (E/INCB/2022/1) is supplemented by the following reports:

No Patient Left Behind: Progress in Ensuring Adequate Access to Internationally Controlled Substances for Medical and Scientific Purposes (E/INCB/2022/1/Supp.1)

Narcotic Drugs: Estimated World Requirements for 2023—Statistics for 2021 (E/INCB/2022/2)

Psychotropic Substances: Statistics for 2021—Assessments of Annual Medical and Scientific Requirements for Substances in Schedules II, III and IV of the Convention on Psychotropic Substances of 1971 (E/INCB/2022/3)

Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances: Report of the International Narcotics Control Board for 2022 on the Implementation of Article 12 of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988 (E/INCB/2022/4)

The updated lists of substances under international control, comprising narcotic drugs, psychotropic substances and substances frequently used in the illicit manufacture of narcotic drugs and psychotropic substances, are contained in the latest editions of the annexes to the statistical forms ("Yellow List", "Green List" and "Red List"), which are also issued by the Board.

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Report of the International Narcotics Control Board for 2022 on the implementation of article 12 of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988

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Foreword

It is my pleasure to present the analysis of the International Narcotics Control Board (INCB) regarding the world precursor situation in 2022. The situation has never been more complex, as reflected in the current report, which highlights the issues relating to chemicals not under international control. Governments have nevertheless identified these chemicals as having been used in illicit drug manufacture and have brought them to the attention of the Board pursuant to article 12, paragraph 12 (b), of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988.

The Board commends those Governments that share information about emerging chemicals and methods of diversion and acknowledges the increasing volume of data provided on form D. The Board urges Governments to submit complete information, including information on methods of diversion and illicit manufacture. Such information will enable meaningful analysis and the identification of emerging trends.

The Board reiterates its support for providing, through its secretariat, the needed technical assistance to Governments to bridge this gap and ensure an effective international response to address the diversion and misuse of both scheduled and non-scheduled chemicals for the illicit manufacture of drugs.

In March 2022, following the Board's recommendation, the Commission on Narcotic Drugs decided to place three precursors of fentanyl and of a number of fentanyl analogues under international control. Two of those substances are close chemical relatives, an issue that the Commission has also addressed for the first time in its resolution 65/3. The resolution encourages Governments to place domestic controls not only on individual substances but also on groups of related chemicals. The Board welcomes this approach as a means to disrupt the emergence of the use of a series of closely related substitute chemicals in response to scheduling action at the international level. This development of substitution with non-scheduled chemicals has been noted with concern over the past years.

To support Governments in their efforts in an increasingly complex and dynamic global context, the Board has consolidated its work under articles 12 and 13 of the 1988 Convention in a new strategy that covers precursors and illicit drug manufacturing equipment. The strategy builds on the successes in international precursor control and extends proven concepts to address non-scheduled chemicals, as well as essential drug manufacturing equipment. In addition, the strategy highlights the importance of engagement with a wide range of industries along the supply chain and the need to support Governments in their efforts to enhance public-private partnerships in different national contexts.

The importance of industry cooperation is also reflected in the thematic chapter of this year's report, which examines the crucial role played by the Internet-related industry, including Internet and email service providers, social media and business-to-business platforms, in facilitating precursor trafficking.

Finally, I wish to thank those Governments that have worked with the Board in developing and maintaining the international precursor control system since its establishment in 1992.

The Board looks to Member States to continue to support INCB in implementing the new strategy, which is required to help shape our collective response to the emerging challenges that we are facing.

Jagjit Pavadia
President of the International
Narcotics Control Board

Preface

The United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988 requires the International Narcotics Control Board to report annually to the Commission on Narcotic Drugs on the implementation of article 12 of the Convention and requires the Commission to periodically review the adequacy and propriety of Tables I and II of the Convention.

In addition to its annual report and other technical publications on narcotic drugs and psychotropic substances, the Board has prepared its report on the implementation of article 12 of the 1988 Convention in accordance with the following provisions, contained in article 23 of the Convention:

1. The Board shall prepare an annual report on its work containing an analysis of the information at its disposal and, in appropriate cases, an account of the explanations, if any, given by or required of parties, together with any observations and recommendations which the Board desires to make. The Board may make such additional reports as it considers necessary. The reports shall be submitted to the Economic and Social Council through the Commission, which may make such comments as it sees fit.

2. The reports of the Board shall be communicated to the parties and subsequently published by the Secretary-General. The parties shall permit their unrestricted distribution.

Contents

*The annexes are not included in the printed version of the present report but are available on the website of the International Narcotics Control Board (www.incb.org).

Figures

Boxes

Maps

Tables

Explanatory notes

The boundaries and names shown and the designations used on the maps in the present publication do not imply official endorsement or acceptance by the United Nations.

The designations employed and the presentation of the material in the present publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Countries and areas are referred to by the names that were in official use at the time the relevant data were collected.

Multiple government sources of data were used to generate the present report, including form D ("Annual information on substances frequently used in the illicit manufacture of narcotic drugs and psychotropic substances"); the Pre-Export Notification Online (PEN Online) system; the Precursors Incident Communication System (PICS); results achieved under Project Prism and Project Cohesion, which are the international operational initiatives regarding chemicals used in the illicit manufacture of, respectively, synthetic drugs, and cocaine and heroin; and official communications with competent national authorities and official national reports on the drug and precursor control situation.

Unless otherwise specified, data provided on form D are referred to by the calendar year to which they apply. The reporting period for data from the PEN Online system and PICS is from 1 November 2021 to 1 November 2022, unless otherwise specified. Where PEN Online system data are used for multiple years, calendar years are used. Additional information was provided through regional and international partner organizations, as indicated in the report.

With regard to data on seizures, readers should bear in mind that reported seizures generally reflect the corresponding level of regulatory and law enforcement activity at that specific time. In addition, as seizures are often the result of law enforcement cooperation among several countries (e.g. through controlled deliveries), the occurrence of seizures and the volumes seized in a given country should not be misinterpreted or used as an overestimation in assessing that country's role in the overall situation of trafficking in precursors.

Reference to "tons" is to metric tons, unless otherwise stated.

The following abbreviations have been used in the present report:

ANPP	4-anilino-*N*-phenethylpiperidine
4-AP	4-anilinopiperidine (*N*-phenyl-4-piperidinamine)
APAA	*alpha*-phenylacetoacetamide (2-phenylacetoacetamide)
APAAN	*alpha*-phenylacetoacetonitrile
1-boc-4-AP	1-boc-4-anilinopiperidine (*tert*-butyl 4-(phenylamino) piperidine-1-carboxylate)
CICAD	Inter-American Drug Abuse Control Commission of the Organization of American States
DEPAPD	diethyl (phenylacetyl)propanedioate
EAPA	ethyl *alpha*-phenylacetoacetate (ethyl 3-oxo-2-phenylbutanoate)
Europol	European Union Agency for Law Enforcement Cooperation
GBL	*gamma*-butyrolactone

GHB	*gamma*-hydroxybutyric acid
INCB	International Narcotics Control Board
INTERPOL	International Criminal Police Organization
IONICS	Project Ion Incident Communication System
LSD	lysergic acid diethylamide
MAMDPA	methyl 3-oxo-2-(3,4-methylenedioxyphenyl)butanoate
MAPA	methyl *alpha*-phenylacetoacetate (methyl 3-oxo-2-phenylbutanoate)
MDMA	3,4-methylenedioxymethamphetamine (commonly known as "ecstasy")
3,4-MDP-2-P	3,4-methylenedioxyphenyl-2-propanone
3,4-MDP-2-P methyl glycidate	methyl ester of 3,4-MDP-2-P methyl glycidic acid
NPP	*N*-phenethyl-4-piperidone
P2NP	1-phenyl-2-nitropropene
P-2-P	1-phenyl-2-propanone
PEN Online system	Pre-Export Notification Online system
PEN Online Light system	Pre-Export Notification Online Light system
PICS	Precursors Incident Communication System
t-boc-MDMA	*N-tert*-butoxycarbonyl-MDMA
UNODC	United Nations Office on Drugs and Crime
WCO	World Customs Organization

Summary

Article 12 of the United Nations Convention against Illicit Trafficking in Narcotic Drugs and Psychotropic Substances of 1988 forms the basis of international precursor control. The fact that there are 190 States parties to the 1988 Convention indicates a firm global commitment to the international system designed to prevent the diversion of chemical precursors to the illicit manufacture of drugs.

In March 2022, the Commission on Narcotic Drugs, at its sixty-fifth session, decided to include three precursors of fentanyl and of some related substances, namely, 4-AP, 1-boc-4-AP and norfentanyl, in Table I of the 1988 Convention. That decision, which came into effect on 23 November 2022, brought the total number of substances scheduled under Tables I and II of the 1988 Convention to 33. Ten of those substances, some of them designer precursors with no known legitimate uses, were added to Table I in the last eight years, indicating the increased sophistication of trafficking entrepreneurs in quickly replacing controlled substances with alternative chemicals that are not subject to international control, for purposes of illicit drug manufacture.

With 126 States parties having submitted form D as at 1 November 2022, the level of reporting of annual information on substances frequently used in the illicit manufacture of narcotic drugs and psychotropic substances remained at the previous level. Since such reporting forms a critical basis for the reports of the Board on the implementation of article 12 of the 1988 Convention, there remains an immediate need to improve the comprehensiveness, quality and timeliness of such reporting.

The issue of the use of non-scheduled chemicals for illicit drug manufacture continued to occupy a pre-eminent position globally. A total of 67 countries across all continents have now reported seizures of substances not included in the two tables of the 1988 Convention, indicating the global spread of the problem. With the exception of cannabis, no drug or class of drugs remains untouched by the use of non-scheduled chemicals. With a view to advancing knowledge and generating action at the national and international levels, the Board has developed guidance material and information resources on this subject. The guidance document entitled "Proliferation of non-scheduled chemicals and designer precursors: options for global action" is one such resource. In addition, in order to facilitate the understanding of the subject, INCB created an interactive compendium to serve as a single reference point for INCB tools and resources on the subject of non-scheduled chemicals and designer precursors. Furthermore, at its sixty-fifth session, the Commission on Narcotic Drugs adopted resolution 65/3, entitled "Intensifying efforts to address the diversion of non-scheduled chemicals frequently used in the illicit manufacture of drugs and the proliferation of designer precursors". The resolution provides a concrete basis for action to address chemicals not under international control, which remains one of the most critical challenges in international precursor control.

The monitoring of international trade in controlled precursors is at the core of international precursor control efforts. The number of Governments formally requesting to receive pre-export notifications for some or all of the substances in Tables I and II had risen to 117 as at 1 November 2022, with the addition of Zambia since the previous year. The data for the reporting year provided more evidence of the effectiveness of the Board's online platform for facilitating such pre-notification, the PEN Online system. For example, timely action by Jordan on pre-export notifications submitted by Egypt prevented the possible diversion of nearly 1 ton of pseudoephedrine preparations.

As regards trafficking in key drug precursors, the decline in reported seizures of ephedrine and pseudoephedrine, substances used in the illicit manufacture of methamphetamine, continued. However, in contrast to the overall decline in seizures of ephedrines, seizures of pseudoephedrine in the form of pharmaceutical preparations more than doubled in 2021 compared with 2020, and more than trebled compared with 2018, indicating a clear trend of resurgence in the use of such preparations for illicit purposes. Furthermore, the location of reported seizures indicates a likely expansion of the illicit

manufacture of methamphetamine to hitherto unaffected territories. This scenario underscores the need for exporting Governments to be mindful of the estimated annual legitimate requirements of the importing countries for imports of precursors of amphetamine-type stimulants when allowing such exports. The reporting year provided more than one instance of exports in excess of annual legitimate requirements, one of which was later objected to by the importing country, indicating a possible diversion attempt.

Insofar as other precursors of amphetamine-type stimulants are concerned, in the reporting year, the global quantity seized of MAPA, included in Table I of the 1988 Convention in 2020, amounted to only about a third of the quantity reported seized in 2020, confirming the previously observed trend of declining quantities seized of substances after their international scheduling, and their replacement by non-scheduled alternatives. Among the newly reported alternative precursors were DEPAPD for amphetamine and methamphetamine, and 3,4-MDP-2-P ethyl glycidate for MDMA and related substances. In addition, seizures of the previously reported substance MAMDPA continued to be reported.

The global quantity reported seized of the key cocaine precursor, potassium permanganate, nearly doubled in comparison with the quantity reported seized in 2020, with the largest quantities being reported by countries in South America and China. Of the 16 countries reporting such seizures, six were in Europe, indicating the existence in Europe of cocaine laboratories for both the recovery of cocaine base from carrier materials used for smuggling, and the conversion of cocaine base into hydrochloride salt. Seizures of non-scheduled chemicals associated with cocaine manufacture included chemicals used to illicitly manufacture controlled cocaine precursors, as well as chemicals associated with efficiency gains.

As regards heroin precursors, global seizures of acetic anhydride continued the declining trend witnessed since 2018, in particular in countries that had previously reported seizures of sizeable amounts of the substance. In 2021, the amount of acetic anhydride seized in Türkiye accounted for more than 60 per cent of the amount of the substance seized globally, thereby corroborating the country's significance as a transit country between Europe and the likely heroin manufacturing sites in Afghanistan. At the same time, trafficking in acetyl chloride, a possible replacement for acetic anhydride that emerged around 2018, continued to be reported in West Asia.

Precursors of other synthetic drugs also continued to be reported seized or diverted from domestic distribution channels. Such incidents indicated the illicit manufacture of fentanyl, LSD, and phencyclidine and related drugs, as well as of ketamine and new psychoactive substances, including substances recently scheduled under the drug treaties.

As already highlighted by the Board in the past, the use of the Internet (the surface web) to facilitate trafficking in precursors continued to be relevant. India reported seizures of controlled substances in 2022, following investigations using the intelligence packages developed as an outcome of the INCB Operation Acronym, conducted in 2021. A drug trafficking network was also identified, indicating the importance of investigating suspicious Internet postings related to precursors.

I. Introduction

1. The present report has been prepared by INCB pursuant to article 23 of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988. It provides an overview of action taken by Governments and by INCB since the publication of the Board's report on precursors for 2021[1] to prevent the diversion of chemicals and to implement the provisions of the 1988 Convention.

2. Following the summary and the present introduction, substantive reporting begins in chapter II, which provides statistics and information on action taken by Governments and the Board in accordance with the provisions of article 12 of the 1988 Convention. This includes information on the utilization of the PEN Online system and a summary of the operational activities under Project Cohesion and Project Prism. The chapter also contains an overview of international cooperation and other initiatives related to precursor control.

3. Chapter III provides an overview of the licit trade in precursors and the latest major trends in the trafficking and illicit use of chemicals, highlighting the most relevant cases of suspicious and stopped shipments, diversion and attempted diversion, and seizures, as well as activities associated with illicit drug manufacture.

4. Chapter IV provides a thematic examination of the facilitation of precursor trafficking through the Internet (the surface web), including activities ranging from the advertising for the sale or purchase of precursor chemicals through websites, or social media or business-to-business platforms, to the mediating of such activities. Throughout this report, specific recommendations and conclusions are highlighted as a basis for Governments to take the necessary action to prevent the diversion of and trafficking in precursor chemicals and their use in illicit manufacture.[2] Chapter V provides recommendations to Governments on the way forward for effective international and domestic precursor control.

5. Annexes I to XI contain updated statistics and practical information intended to assist competent national authorities in carrying out their functions. The annexes are not included in the printed copies of the present report but are included in the digital version of the report, available on the INCB website.

II. Action taken by Governments and the International Narcotics Control Board

A. Scope of control

6. On 16 March 2022, the Commission on Narcotic Drugs decided, in accordance with the Board's recommendation, to add 4-AP, 1-boc-4-AP and norfentanyl, three precursors of fentanyl and of a few related substances, to Table I of the 1988 Convention. The decision became effective on 23 November 2022, 180 days after it was communicated by the Secretary-General to Governments.

7. As has been common practice in the past, and pursuant to Economic and Social Council resolution 1992/29, INCB has requested WCO to establish unique Harmonized System codes[3] for the newly scheduled chemicals. Until such time as each substance is assigned a unique Harmonized System code, **INCB encourages Governments to adopt, on a voluntary basis, interim, discrete codes based on the applicable Harmonized System group code.**[4]

[1] *Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances: Report of the International Narcotics Control Board for 2021 on the Implementation of Article 12 of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988* (E/INCB/2021/4).

[2] A compilation of the recommendations relating to international precursor control made by INCB in previous years is available on the Board's website (www.incb.org).

[3] See WCO, *Harmonized Commodity Description and Coding System*, 7th ed. (Brussels, 2022).

[4] Harmonized System classifications of non-scheduled chemicals used in the illicit manufacture of drugs are available to competent national authorities on a secure page of the INCB website.

B. Adherence to the 1988 Convention

8. As at 1 November 2022, the 1988 Convention had been ratified, acceded to or approved by 190 States and formally confirmed by the European Union (extent of competence: art. 12). There have been no changes in that regard since the publication of the INCB report on precursors for 2021, thus leaving seven States – four in Oceania and three in Africa (see annex I)[5] – that have yet to become parties to the Convention. To reduce their vulnerability to precursor trafficking, **INCB urges the seven States that have yet to become parties to the 1988 Convention to implement the provisions of article 12 and accede to the Convention without further delay.**

C. Reporting to the Board pursuant to article 12 of the 1988 Convention

9. Under article 12, paragraph 12, of the 1988 Convention, Governments are required to report annually to INCB information on substances frequently used in the illicit manufacture of narcotic drugs and psychotropic substances (for which form D is used).[6] Specifically, the information to be submitted includes: *(a)* the amounts seized of substances included in Tables I and II of the 1988 Convention and, when known, their origin; *(b)* any substance not included in Table I or Table II that is identified as having been used in the illicit manufacture of narcotic drugs or psychotropic substances; and *(c)* methods of diversion and illicit manufacture. That information is subsequently used to identify regional and global patterns and trends (see chap. III).

10. As at 1 November 2022, a total of 127 States parties to the 1988 Convention had submitted form D for 2021. Less than 50 per cent of States parties submitted their form by the deadline of 30 June 2022, and a number of States parties failed to report data for 2021 altogether. Several parties have not submitted form D for the past 5 or even 10 years, including 21 countries in Africa and 8 in Oceania (see table 1).[7] Kuwait resumed submission of form D after more than 5 years, and Togo after more than 8 years. Comprehensive information about the status of the submission of form D by individual Governments is included in annex II.

Table 1. States parties failing to report as required under article 12, paragraph 12, of the 1988 Convention, 2021

Africa		
Algeria	Eritrea[a]	Mauritania
Angola	Eswatini[b]	Namibia[a]
Burkina Faso[b]	Ethiopia[a]	Niger
Burundi	Gambia[a]	Rwanda
Cabo Verde	Guinea[b]	Sao Tome and Principe[a]
Central African Republic[b]	Guinea-Bissau[a]	Senegal
Chad	Lesotho[b]	Seychelles[a]
Comoros[b]	Liberia[b]	Tunisia
Congo[b]	Libya[b]	Zambia[a]
Côte d'Ivoire[a]	Malawi[b]	
Djibouti[b]	Mali[a]	
Americas		
Antigua and Barbuda[b]	Brazil	Saint Kitts and Nevis[b]
Bahamas[b]	Cuba[b]	Saint Vincent and the Grenadines
Barbados[a]	Dominica	Suriname
Belize	Grenada[b]	
Asia		
Afghanistan	Maldives	Timor-Leste
Bangladesh	Nepal	Viet Nam
Cambodia[a]	Oman	Yemen
Indonesia		
Oceania		
Cook Islands[b]	Nauru[b]	Samoa[a]
Fiji[a]	Niue[b]	Tonga[b]
Marshall Islands[b]	Palau	Vanuatu[b]
Micronesia (Federated States of)		

Note: See also annex II.

[a] Government that failed to submit form D for any year during the past five years (2017–2021).

[b] Government that failed to submit form D for any year during the past 10 years (2012–2021).

[5] Equatorial Guinea, Kiribati, Papua New Guinea, Solomon Islands, Somalia, South Sudan and Tuvalu.

[6] The latest version of form D is available on the INCB website in the six official languages of the United Nations. In an effort to streamline and expedite the reporting process and to minimize the potential for data entry errors, INCB requests the utilization of a spreadsheet form. Fifty-three States have used the spreadsheet version of form D for 2021.

[7] The Holy See and Liechtenstein did not furnish form D separately, as their data are included in the reports of Italy and Switzerland, respectively.

11. As at 1 November 2022, 71 Governments had reported seizures of substances listed in Table I or Table II of the 1988 Convention on form D for 2021. Fifty-seven Governments had reported seizures of substances not included in Table I or Table II, and 38 had supplied information concerning methods of diversion and illicit manufacture. However, a number of Governments submitted incomplete information or submitted aggregated figures lacking details sufficient to allow the Board to analyse and identify emerging trends in trafficking in precursors and the illicit manufacture of drugs (see map 1). **The Board therefore once again urges all Governments to provide comprehensive, mandatory information on seizures and on methods of diversion and illicit manufacture on time and in one form that consolidates the information from all relevant agencies.**

D. Legislation and control measures

12. Establishing and strengthening appropriate national control measures constitutes the basis for effective monitoring of the movement of precursors both in international trade and domestic distribution. In accordance with Economic and Social Council resolution 1992/29, the Board collects information on the specific controls applied to the substances in Tables I and II of the 1988 Convention and maintains a directory of those requirements to assist Governments in monitoring trade in controlled chemicals. The Board also maintains a list of chemicals under national control in different countries. Both resources are available as part of the Board's information package on the control of precursors and can be accessed by competent national authorities on the Board's secure website. To ensure that the information is up to date at all times, **INCB encourages all Governments to inform it regularly of relevant changes to their national precursor legislation and requirements related to the legitimate trade in these substances.**

13. Since 1 November 2021, the changes in control measures set out below have come to the attention of INCB.

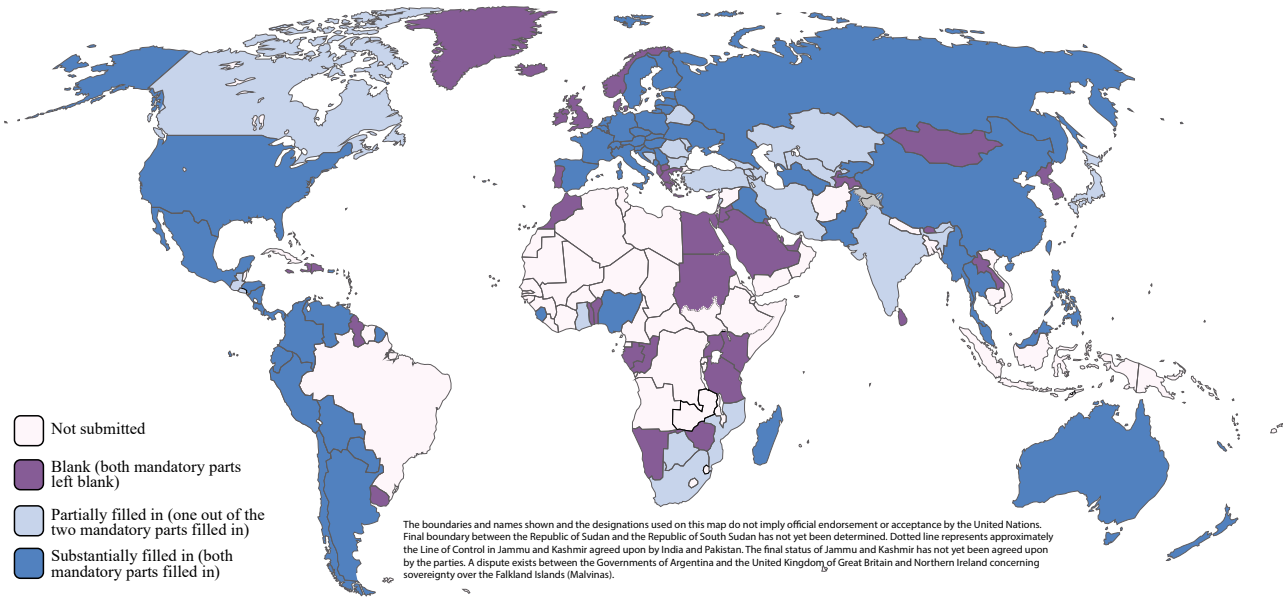
14. In December 2021, the de facto authorities of Afghanistan banned the harvesting of *Ephedra* plant in the Afghan provinces of Ghor, Farah, Nimroz and Bamyan.[8] This ban in specific provinces preceded a decree issued on 3 April 2022 announcing a ban on poppy cultivation and the manufacture of illicit drugs across Afghanistan.[9]

15. In the Netherlands, a new law that entered into force on 1 January 2022 gave the Ministry of Health, Welfare and Sport and the Ministry of Justice and Security the authority to schedule chemicals that can be used to manufacture illicit drugs and that have no known legal use. A multi-stakeholder expert group was set up to inform this

[8] David Mansfield, "Banning ephedra and bolstering the rural economy of Afghanistan", Alcis, 13 January 2022.

[9] "Islamic Emirate announces ban on poppy cultivation", TOLO News, 3 April 2022.

Map 1. Status of submissions by Governments of form D for 2021 containing information concerning seizures of substances listed in Table I or Table II of the 1988 Convention and seizures of substances not listed in Table I or Table II, as at 1 November 2022



scheduling process, which includes representatives of the Netherlands Forensic Institute and the chemical industry, as well as law enforcement agencies, customs authorities and the Netherlands Public Prosecution Service. An initial list of chemicals to be scheduled was to be finalized before the end of 2022.

16. On 8 March 2022, the Secretary-General of the United Nations, in his capacity as depositary of the 1988 Convention, communicated that, as of 4 March 2022, Ukraine was unable to guarantee the full implementation of its obligations under the Convention.

17. In August 2022, a ministerial order by the Government of Canada extended the scope of control over 4-AP to include its derivatives and analogues, for a period of one year. As a result of the order, the import, export, production, trafficking, and possession for the purposes of trafficking of analogues and derivatives of 4-AP became subject to criminal prohibitions under the Controlled Drugs and Substances Act. The order responded to the decision of the Commission on Narcotic Drugs to add 1-boc-4-AP to Table I of the 1988 Convention. It was also in line with one of the recommendations made by the Commission on Narcotic Drugs in its resolution 65/3, whereby the Commission encouraged Member States to consider taking domestic measures on chemicals related to substances included in Table I and Table II that may readily be converted to or substituted for those substances. In addition, the order by Canada also extended that recommendation to analogues, that is, to precursors of certain fentanyl analogues, such as *para*-fluorofentanyl and bromofentanyl.

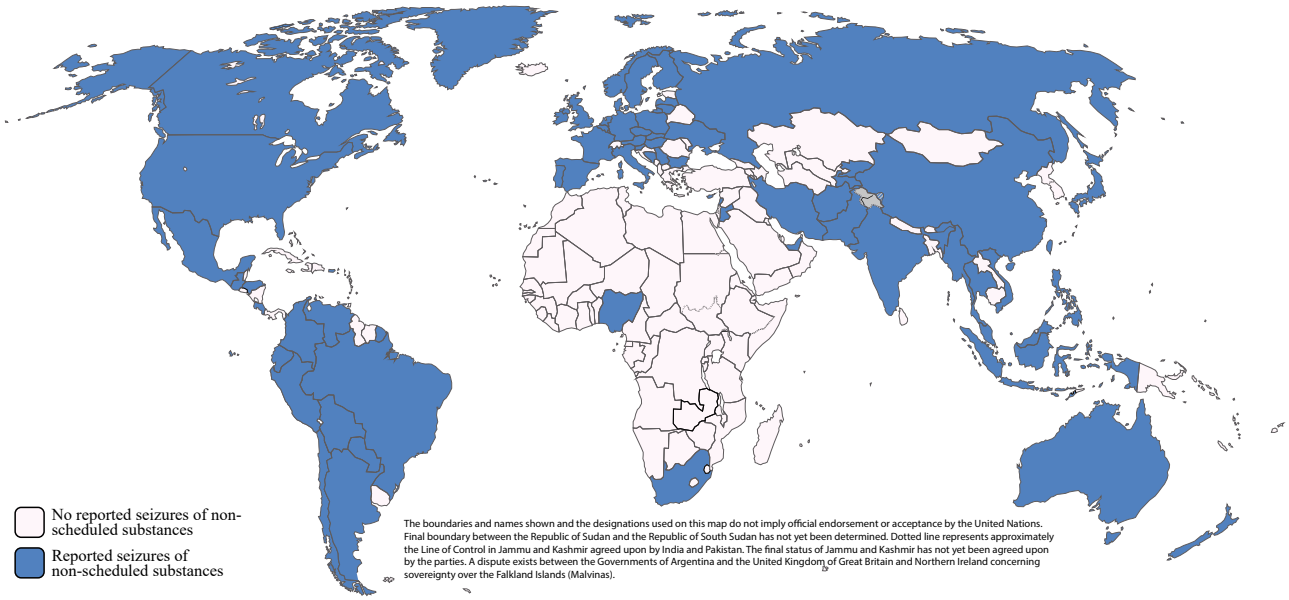
18. On 31 October 2022, the Government of Thailand decided to introduce a registration requirement for importers, exporters and end users of sodium cyanide, benzyl cyanide and benzyl chloride. As an immediate measure and while the issuance of import and export permits was under consideration, the Government suspended exports and was to reduce imports of two of the three chemicals, sodium cyanide and benzyl cyanide. The measures were in response to the chemicals alleged to have been used in illicit methamphetamine manufacture.

19. Pursuant to European Commission Delegated Regulation (EU) 2022/1518, and effective 3 October 2022, EAPA and MAMDPA, precursors of P-2-P and 3,4-MDP-2-P, respectively, were added as category 1 substances in the annexes of Regulation (EC) No. 273/2004 of the European Parliament and the European Council and Council Regulation (EC) No. 111/2005. Category 1 entails the strictest control and monitoring measures under the European Union precursor legislation.

Measures to address the proliferation of non-scheduled chemicals, including designer precursors

20. Chemicals not listed in Table I or Table II of the 1988 Convention that can be used to illicitly manufacture, or substitute for, controlled precursors, have been encountered in all regions of the world (see map 2). Since the publication of Board's previous report on precursors, the

Map 2. Governments reporting seizures of substances not listed in Table I or Table II of the 1988 Convention on form D and through PICS, 2018–2022



number of Governments reporting such substances has increased from 66 to 67.

21. Given the global spread of non-scheduled chemicals, the Board remains convinced of the need to further advance measures to address the proliferation of chemicals not included in Table I or Table II of the 1988 Convention, and to facilitate global cooperation on this matter. To that end, and in continuation of its long-standing work in the area, INCB developed materials and facilitated a number of initiatives, including the guidance document entitled "Proliferation of non-scheduled chemicals and designer precursors: options for global action", which consists of a collated list of policy options and approaches. The document, which is the result of a series of targeted international consultations with technical experts and Governments organized by the Board throughout 2021, was made available on the INCB website, in all six official languages of the United Nations.

22. In March 2022, the Commission on Narcotic Drugs adopted resolution 65/3, entitled "Intensifying efforts to address the diversion of non-scheduled chemicals frequently used in the illicit manufacture of drugs and the proliferation of designer precursors". In the resolution, the Commission called upon Member States to intensify their efforts to address the diversion of non-scheduled chemicals, provided policy recommendations, encouraged compliance with the 180-day period following the communication by the Secretary-General within which parties to the 1988 Convention should place newly scheduled substances under national control, and called for improved measures for data collection, international and regional cooperation and training. In the resolution, the Commission also referenced various INCB tools and resources and encouraged Member States to make active use of them.

23. To complement the strengthened efforts in the area of non-scheduled chemicals and designer precursors, the Board has developed an interactive compendium of relevant INCB tools and resources. The compendium serves as a single reference point, providing an overview of the benefits, uses and application of various tools and resources that can aid Governments in identifying the ever-growing number of non-scheduled chemicals, assessing the risks of their potential use in illicit drug manufacture and communicating incidents related to them. The interactive compendium is accessible on the INCB website and includes descriptions and visual representations of the INCB guidance document on non-scheduled chemicals, the recently launched PEN Online Light system (see para. 40 below), PICS, the limited international special surveillance list of non-scheduled substances frequently used in illicit drug manufacture, the list of chemicals under national control in different countries (known as Table 4), a set of resources on enhancing industry cooperation, a compilation of precursor chemical monographs, and the precursors module of the United Nations Toolkit on Synthetic Drugs.

E. Submission of data on licit trade in, uses of and requirements for precursors

24. In accordance with Economic and Social Council resolution 1995/20, Governments provide data on their licit trade in, uses of and requirements for substances listed in Tables I and II of the 1988 Convention. Together with information about pre-export notifications exchanged through the PEN Online system, those data enable INCB to identify unusual trade patterns and suspicious activity, thereby preventing diversion.

25. As at 1 November 2022, 117 Governments had submitted data on licit trade in substances in Table I or Table II of the 1988 Convention, and 106 Governments had furnished data on the licit uses of and/or requirements for one or more of those substances (see annex IV). As in the past, those data, although submitted on a voluntary basis, were submitted by more Governments, and were more comprehensive, than the mandatory data on seizures of precursors (see para. 11 above).

Box 1. Commission on Narcotic Drugs resolution 65/3 and groups of chemically related precursors

For several years, INCB has highlighted the need to more proactively address traffickers' exploitation of groups of substances that are chemically related to controlled precursors, including derivatives and analogues of such precursors.

In paragraph 7 of its resolution 65/3, the Commission on Narcotics Drugs encouraged Member States, when placing domestic controls on a substance pursuant to a decision by the Commission to add that substance to Table I or Table II of the 1988 Convention, to consider also taking domestic measures on related chemicals that may readily be converted to or substituted for that substance, in accordance with national legislation.

In August 2022, Canada applied this approach at the national level (see para. 17 above).

F. Annual legitimate requirements for imports of precursors of amphetamine-type stimulants

26. With a view to providing exporting countries with an additional tool to monitor the amounts of selected amphetamine-type stimulant precursors involved in proposed shipments to importing countries, the Commission on Narcotic Drugs, in its resolution 49/3, requested Member States to provide to INCB estimates of their annual legitimate requirements for 3,4-MDP-2-P, pseudoephedrine, ephedrine and P-2-P, and, to the extent possible, estimated requirements for preparations containing those substances that could be easily used or recovered by readily applicable means. Annual legitimate requirements for imports of precursors of amphetamine-type stimulants as reported by Governments are presented in annex V to the present report and are updated regularly on a dedicated page of the INCB website.[10]

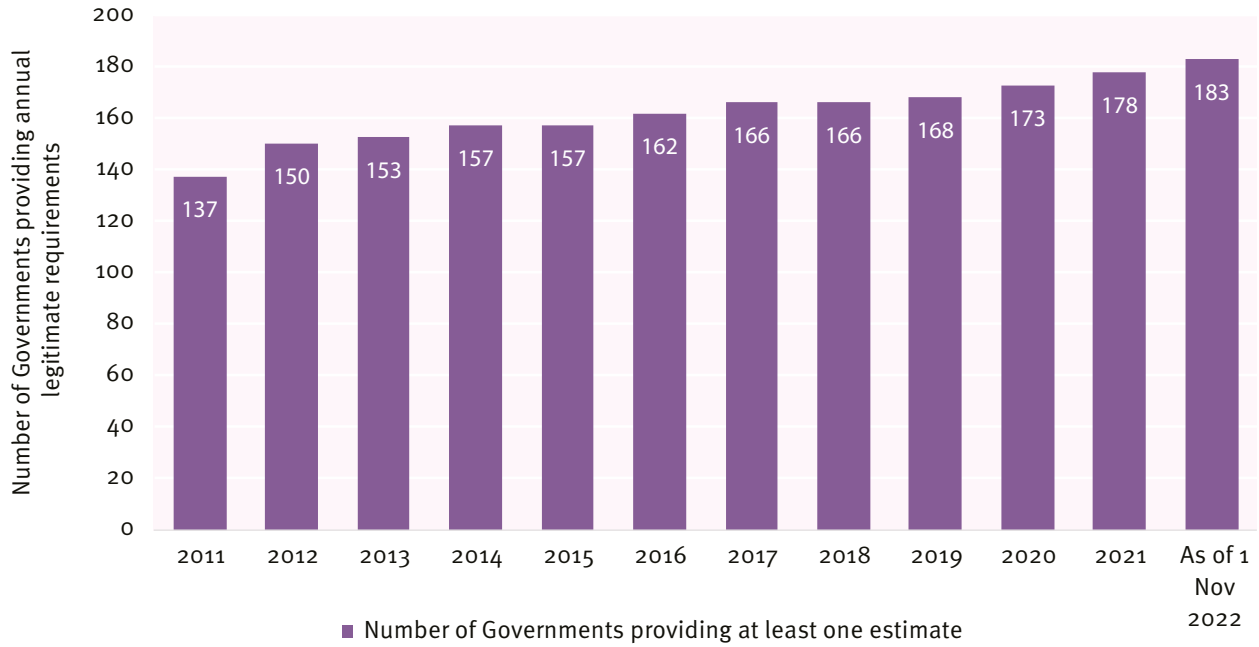
27. Governments have continued to report their annual legitimate requirements for imports of precursors of amphetamine-type stimulants and their preparations to INCB, mostly on form D and, to a lesser extent, by means of individual communications during the year. As at 1 November 2022, 183 countries and territories had provided at least one estimate (see figure 1). The figure includes a number of territories and States that are not yet party to the 1988 Convention. At the same time, a total of 22 States parties to the 1988 Convention had not yet provided any estimates to the Board; the majority of those are in Africa and Oceania.

28. The main objective of estimating such requirements is to provide the competent authorities of exporting countries with an indication of the amounts legitimately required by importing countries, with a view to putting individual shipments, as well as more established patterns of trade, in perspective and enabling better monitoring and control. Since the publication of the Board's report on precursors for 2021, 96 countries and territories have reconfirmed or updated their estimates for at least one of the substances, a significantly lower number than in the previous year. However, some estimates provided to INCB date back several years and have not been updated recently. Ninety States parties to the 1988 Convention are in this category, some having missed the opportunity to update their submission for one year and others for several years.

29. In several countries, planned shipments of precursors of amphetamine-type stimulants pre-notified through the PEN Online system exceeded or were close to reaching the estimated annual requirements for the concerned period at the time of the pre-notification, prompting follow-up requests from INCB for clarification by the respective competent authorities (see also paras. 77 and 78 below). On the other hand, several countries had indicated annual legitimate requirements that by far exceeded the amounts imported or pre-notified to them for import,

[10] www.incb.org/incb/en/precursors/alrs.html.

Figure 1. Number of Governments providing estimates of annual legitimate requirements, 2011–2022



suggesting unrealistically high estimated requirements. In some other cases, Governments indicated on form D the use of a substance or a number of substances for specific purposes; however, they did not provide any indication regarding the estimated amounts required. **INCB invites Governments to review the methodology used to estimate their annual legitimate requirements for imports of individual precursors of amphetamine-type stimulants to reflect changing import needs, and to provide updates to the Board, at any time throughout the year, on any necessary changes.**

30. In order to establish their estimates more accurately, Governments may refer to the *Guide on Estimating Requirements for Substances under International Control*, developed by INCB and the World Health Organization, as well as the recently updated document entitled "Issues that Governments may consider when determining annual legitimate requirements for ephedrine and pseudoephedrine". Both documents are available on the Board's website.

31. During the reporting period, some countries, including India, Jordan and Nigeria, revised their estimates significantly downwards. India, which previously had the largest estimated annual legitimate requirements for ephedrines and pseudoephedrines worldwide, revised its annual legitimate requirements down to almost zero to reflect import requirements, following the updated guidance of the Board. Jordan has further reduced its annual legitimate requirements following a similar step last year. This follows an unprecedented pattern of imports of pseudoephedrine and subsequent exports of preparations containing that substance to the Kurdistan region of Iraq, which the Board had noted in the past.[11]

G. Pre-export notifications and utilization of the Pre-Export Notification Online system

32. Knowledge about incoming shipments in international trade and the possibility to verify the legitimacy of a planned import are key in preventing the diversion of precursors. The international precursor control system offers Governments two complementary tools. First, by invoking article 12, paragraph 10 (a), of the 1988 Convention, Governments of importing countries can make it mandatory for exporting countries to inform them of planned shipments of precursors prior to shipping. Second, although not a treaty requirement, Governments should also register with the Board's automated online system for the exchange of pre-export notifications, PEN Online, to ensure that they receive information about all relevant planned shipments of chemicals destined for their territory in real time, thus enabling them to verify the legitimacy of a transaction and suspend or stop it, as required, before the shipment leaves the exporting country.

1. Pre-export notifications

33. As at 1 November 2022, 117 countries and territories had formally requested to receive pre-export notifications for some or all of the substances in Table I and Table II of the 1988 Convention (see annex VI). This figure includes the Government of Zambia, which in June 2022 invoked article 12, paragraph 10 (a), for all substances in Tables I and II. As traffickers are continuously looking for vulnerable territories to carry out their illicit drug manufacturing activities, it is essential that all Governments are officially pre-notified of shipments of controlled precursor chemicals destined to their territory or territories; it is equally important that all shipments are monitored, and not just those destined for territories where illicit manufacture is known to take place, so that suspicious consignments can be identified, regardless of their destinations. **In order for the pre-export notification system to be effective, the Board calls upon all remaining Governments that have not yet invoked the provisions of article 12, paragraph 10 (a), of the 1988 Convention, notably those in Africa and Oceania, to do so without further delay.**

34. **The Board furthermore strongly encourages interested Governments and organizations to use bilateral, regional and multilateral initiatives to draw attention to, and help other Governments to take advantage of, the provisions of article 12, paragraph 10 (a), of the 1988 Convention with regard to all substances in Table I and Table II of the Convention.**

2. Pre-Export Notification Online system

35. Since the Board published its report on precursors for 2021, the Governments of Fiji, Malawi and Mongolia have been registered as users of the PEN Online system, thus increasing the number of Governments with authorized access to that electronic tool to 168 countries and territories. The number of pre-export notifications communicated through the PEN Online system has remained stable, with an average of 2,900 notifications sent per month during the reporting year. Since 1 November 2021, about 35,000 pre-export notifications have been submitted by 69 exporting countries and territories through the PEN Online system. Although the Board is pleased to note that 85 per cent of all countries and territories using

[11] See, for example, the INCB report on precursors for 2019 (E/INCB/2019/4), para. 79.

the system view more than 90 per cent of their incoming pre-export notifications, the number of Governments not viewing them, notably in Africa and Oceania, still raises some concern (see figure 2). **INCB therefore reiterates its recommendation to importing Governments that are registered as users of the PEN Online system to make active use of the system for all transactions involving precursors and to respond to exporting authorities in a timely manner where necessary.**

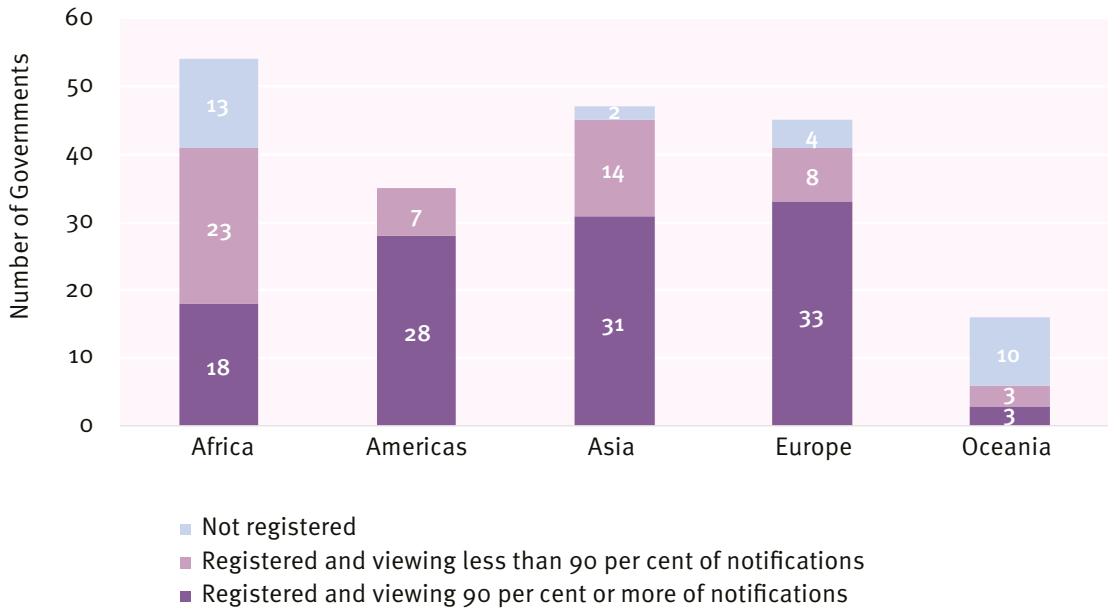
36. Less than 5 per cent of pre-export notifications were objected to during the reporting year. Similar to previous years, many of those objections were raised for administrative reasons. To avoid unnecessary administrative objections and delays in shipments, **the Board reminds exporting authorities to include all relevant details, especially authorization numbers, where available, when submitting a pre-export notification in the PEN Online system. Preferably and where available, exporting Governments should consider attaching a copy of the import authorization to the pre-export notification in the PEN Online system to facilitate verification by the authorities of importing countries.**

37. The Board has repeatedly highlighted the need to take prompt action upon receipt of a pre-export notification. Specifically, this implies that the importing Government should verify the legitimacy of the shipment in question, namely, the importing company and the amount pre-notified, and provide feedback to the exporting authority. Undertaking these activities within a period of 7 to 15 working days has become established practice. During the reporting period, the Board noted a few instances where timely action had prevented possible trafficking attempts from proceeding and others where lack of a timely response to the pre-export notification had resulted in dubious exports requiring subsequent investigations (see para. 77 below). **The Board encourages Governments to make effective use of the PEN online system to identify suspicious shipments and possible diversion attempts. Close monitoring of the submitted pre-export notifications and prompt responses by the importing countries are the most effective remedies to prevent chemicals intended for licit purposes from entering illicit channels. The Board also encourages exporting and importing Governments to treat objected shipments as the starting point for investigations to identify traffickers and modi operandi.**

38. Another trend noted was the pre-notification of planned shipments in excess of the quantities indicated by the importing countries as their estimated annual legitimate requirements (see paras. 77 and 78 below). **The Board encourages the Governments of exporting countries to consider the annual legitimate requirements of the importing countries before authorizing exports of selected precursors of amphetamine-type stimulants and preparations containing such substances, pursuant to Commission on Narcotic Drugs resolution 49/3.[12] Shipments in excess of quantities indicated by importing countries as their legitimate needs could possibly be trafficking attempts.**

[12] An updated list of annual legitimate requirements is available on the Board's website.

Figure 2. Level of utilization of the PEN Online system, by region, 2021



Box 2. Responsibility of transit countries to prevent the diversion of internationally controlled precursor chemicals[a]

Normal commercial practice may involve shipping a chemical through one or more countries. Therefore, in addition to exporting and importing countries, transit countries have an important role to play in preventing diversion, pursuant to article 12, paragraph 9 (c), of the 1988 Convention. However, the Board has noted that, whereas some transit countries are informed of shipments entering their country en route to another country, in many cases, owing to a lack of full documentation, transit countries may not be aware that a specific transit is to occur.

It is therefore essential that the authorities of transit countries are informed fully and in advance by the authorities of the exporting country of the transit that is to occur. In practice, this can be accomplished by copying a pre-export notification to the authorities of transit countries. While not mandatory under the 1988 Convention, some Governments also require transit authorizations to be issued.

In the process of determining the legitimacy of transit shipments of internationally controlled precursors, it is important that exporting, importing and transit countries establish good working relationships with each other to avoid delaying legitimate trade. Where information is provided about suspicious shipments in transit, national authorities should cooperate by sharing pertinent information and providing assistance in law enforcement operations. Specifically, the authorities of transit countries should:

- Invoke article 12, paragraph 10 (a), of the 1988 Convention and review all incoming pre-export notifications when copied in as a transit country.

- Put in place a monitoring mechanism to identify suspicious shipments and ensure legislative power to seize shipments of controlled chemicals, when necessary, or to delay onward shipment, in accordance with national law, until such time as the authorities are satisfied that the shipment is intended for licit purposes.

- Ensure close coordination of the activities of the different authorities and actors, in particular those of customs authorities and industry, all of which may be in a position to confirm the legitimacy of shipments involving controlled chemicals.

- Check shipping documents to ensure that:

  - They are fully completed and that there are no inaccuracies;

  - The shipment of a controlled chemical is indeed considered a transit shipment or a shipment that has entered the country under conditions of customs surveillance and that its exportation has been authorized by the exporting country;

  - There are sound grounds for routing the consignment through the particular transit country;

  - The regulations and legal requirements of the importing country, or next transit country, are fully met;

  - The operator, individuals, companies or other parties involved in the transaction have been suitably vetted and are authorized to handle the chemical or chemicals involved.

- In case of concern about the legitimacy of a shipment, consider authorizing the shipment only upon receiving an explicit response from the authorities of the subsequent importing country or arranging for a controlled delivery.

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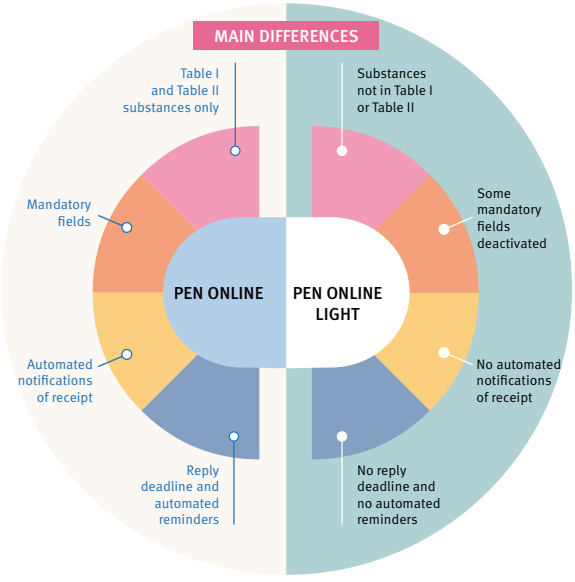
[a] A discussion on the global issue “Responsibilities of transit countries in the licit trade in internationally controlled substances” can be found in the annual report of the Board for 2022 (E/INCB/2022/1).

3. Pre-Export Notification Online Light system: sending pre-export notifications for non-scheduled chemicals on a voluntary basis

39. Since early 2021, the authorities of some exporting countries have started to systematically send advance notifications for shipments of chemicals not in Table I or Table II of the 1988 Convention to importing countries by email, often sending a copy to INCB. This practice has emerged in response to changes in national legislation and domestic controls requiring the sending of such pre-export notifications.

40. To respond to the emergence of non-scheduled chemicals and designer precursors and assist Governments in addressing the issue of chemicals that are not under international control but that may be controlled nationally in one or more countries, the Board launched the **PEN Online Light system** in October 2022. Analogous to the PEN Online system, The PEN Online Light system is a tool that exporting Governments can use to notify importing countries about planned shipments of internationally non-scheduled chemicals on a voluntary basis. It uses the same technology as the PEN Online system, but given its voluntary nature, some features in the PEN Online system have been deactivated in the PEN Online Light system (see figure 3). **The Board recommends that the authorities of exporting countries actively use the PEN Online Light system when notifying importing Governments of shipments involving non-scheduled chemicals. Importing authorities, likewise, are encouraged to make use of this free tool to receive advance notifications of proposed shipments of non-scheduled chemicals destined for their territories.**

Figure 3. Main differences between the PEN Online system and the PEN Online Light system



H. Other activities and achievements in international precursor control

1. Project Prism and Project Cohesion

41. The INCB Precursors Task Force, which steers the activities of the two operational projects of INCB, Project Prism and Project Cohesion,[13] decided to conduct, jointly with WCO and the UNODC-WCO Container Control Programme, a multilateral activity related to free zones in selected countries. In addition, Operation Knockout was conducted jointly under Project Prism, Project Ion and the INCB Global Rapid Interdiction of Dangerous Substances (GRIDS) Programme at the end of 2022. The results of the operation, which was aimed at identifying and dismantling illicit manufacturing operations, suspicious online marketing activities, and distribution and redistribution points involving GBL and 1,4-butanediol, among other substances, are to be evaluated by the Task Force in 2023.

42. Operation Acronym, aimed at addressing the diversion of precursors by means of the Internet (specifically, the surface web), was conducted in February 2021. Following the conclusion of the operation, "intelligence packages" were developed and shared with the countries concerned to facilitate appropriate follow-up investigations. One such package was shared with the authorities of India in September 2021. Subsequent investigations were successful in unearthing a major drug trafficking network that was involved in the diversion and supply of several nationally and internationally controlled substances, including ephedrine, pseudoephedrine, tramadol, oxycodone, alprazolam, diazepam, codeine and ketamine. The investigations also led to seizures of ketamine and ephedrine, the arrest of four persons and the obtaining of intelligence about a shipment originating in Mexico and destined for Australia, details of which were shared with Australia. In addition, one large-scale drug trafficker was identified in Mexico and authorities in Australia seized 1 kg of methamphetamine. The investigations were ongoing.

43. During the reporting period, INCB also continued to serve as a focal point for the exchange of information on suspicious transactions in legitimate trade, trafficking trends, identified modi operandi and emerging

[13] The two projects, which currently bring together operational focal points from law and regulatory enforcement authorities of more than 140 Governments worldwide, serve as platforms for international cooperation to address the diversion of and trafficking in chemicals used in the illicit manufacture of synthetic drugs (Project Prism), and heroin and cocaine (Project Cohesion). A summary of the minimum action needed for international multilateral cooperation under the two projects is available in the INCB report on precursors for 2015 (E/INCB/2015/4), box 2.

non-scheduled chemicals, including through PICS (see sect. 2 below). Six special alerts were issued and shared with focal points, including information on interim outcomes of the above-mentioned investigation in India; the emergence of 3,4-MDP-2-P ethyl glycidate, a new designer precursor of MDMA; and common features of shipments involving a variety of designer precursors (see also para. 126 below). All past alerts are available to registered users of PICS.

2. Precursors Incident Communication System

44. PICS continued to play a central role in alerting registered users worldwide to the further evolution of the landscape of non-scheduled chemicals in terms of new substances, the complexity of trafficking routes and the geographical spread of designer precursors. PICS also continued to provide leads to national authorities to assist them in identifying links between seizures, initiating backtracking investigations, conducting further seizures and preventing diversion attempts.

45. As at 1 November 2022, PICS had about 600 registered users from 124 countries and territories, representing more than 300 agencies in all regions.[14] Between 1 November 2021 and 1 November 2022, more than 250 new precursor-related incidents involving over 740 individual substance-related communications were communicated through the system. This brings the total number of incidents that have been communicated through PICS since its establishment in 2012 to more than 3,700. As in the past, the newly reported incidents had occurred in all regions of the world and involved 16 substances in Table I of the 1988 Convention, 6 substances in Table II and 40 substances included in the international special surveillance list. Incidents involving more than 60 additional non-scheduled substances that are not included in Table I or Table II or in the international special surveillance list were also communicated. Some of the incidents involved multiple substances, in particular the incidents involving clandestine laboratories. During the reporting period, there were also nine incidents involving different types of laboratory equipment. The Board would once again like to commend PICS users for sharing incidents involving precursors and/or equipment through the system. **The Board encourages PICS users to increase the level of actionable details shared through PICS and to also include leads about essential equipment used in illicit drug manufacture, to assist Governments in analysing the latest modi operandi used by traffickers and updating risk profiles used to identify trafficking in precursors and equipment across borders.**

3. Cooperation with industry

46. Cooperation with industry is an essential and effective component of any regulatory framework. INCB has repeatedly reiterated that such cooperation should not be limited only to the chemical and pharmaceutical manufacturing industry but should extend to industries concerned in any way with the supply of the substances. Overall, the cooperation should involve all industries whose products or services may be misused in connection with illicit drug manufacture, including those that manufacture or distribute equipment.

[14] Governments that have not yet registered PICS focal points for their national authorities involved in precursor control may request an account by writing to incb.pics@un.org.

Box 3. Precursors Incident Communication System

In October 2021, in its tenth year of operation, PICS was upgraded with new features, including the following:

- A function for extensive web browser-type searches, with several fixed filtering options to refine the search and the possibility to add additional filtering options by means of dynamic filtering
- Enhanced report generation functionalities to support analysis and backtracking investigations
- Features aimed at facilitating the more meaningful exchange of information regarding cases involving equipment
- In addition to information on actual seizures of precursors and equipment, PICS now provides for the sharing of details of suspicious shipments

47. Specifically, the Board considers it important that the cooperation involve not only known industries that are licensed or otherwise regulated under national precursor legislation to deal with controlled precursors but also other categories of industries that might, often unknowingly, be targeted by traffickers in order to obtain chemicals for illicit drug manufacture (see figure 4 below). To assist Governments in their efforts, the Board has prepared a global review and guidance document on those categories that is available to competent national authorities on its secure website.[15] **The Board encourages Governments to peruse the document and to map their national industry landscape with the aim of understanding which categories are available in their territories and sensitizing the industries concerned.**

48. In September 2022, the Board made an additional resource available to Governments, a document entitled "National practices related to public-private partnerships in the area of drug precursors and non-scheduled chemicals used in illicit drug manufacture".[16] The document provides a summary of the key findings of an INCB survey conducted in 2021 that took stock of existing national public-private cooperation mechanisms worldwide. The survey confirmed that the nature, format and scope of the cooperation between Governments and the private sector vary significantly among countries and regions depending on the respective national context. To illustrate how cooperation with the chemical industry has been established and implemented in different national contexts, several Governments provided their practices and case studies to the Board.

49. For a number of years, the Board has encouraged and facilitated the practice of twinning. This practice links counterparts from the public and private sectors in countries that already have in place well-established cooperation arrangements with industry and thus assists Governments wanting to establish or further enhance such cooperation. Since 2016, practical guidance in the context of twinning arrangements has been provided by authorities of France and Switzerland to authorities in the United Republic of Tanzania. The cooperation resulted in the signing of a memorandum of understanding with two pharmaceutical associations and a number of chemical companies in 2021, and in the finalization of a voluntary code of practice in 2022.

50. **The Board encourages Governments to take advantage of available reference and guidance materials, including the compilation of national practices and case studies, as well as opportunities for twinning arrangements. The Board stands ready to facilitate twinning arrangements between countries.**

[15] The document is available at www.incb.org/incb/secured/precursors/Global_review_of_Categories_of_Industries.pdf.

[16] Available to Governments on the Board's secure website at www.incb.org/incb/secured/precursors/National_Practices_Related_to_Public-Private_Partnerships.pdf.

Figure 4. Categories of industries that might be involved in the manufacture, trade or distribution of chemicals used for illicit drug manufacture

[a] The term "producers of fine and specialty chemicals" covers many subcategories of industries, such as those related to flavours and fragrances, mining and paper.

51. An interactive compendium describing and visualizing INCB tools and resources on public-private partnership and voluntary cooperation with industry has been published and made available to Governments on the INCB website. The compendium includes a discussion of the benefits, use and application of the various INCB brochures, guidelines, practical notes, publications and other resources that can help Governments to understand the different elements of public-private partnerships, including ways to set up, encourage or enhance such partnerships, learn from practical national case studies and better understand the complex landscape of different industries.

52. A discussion on the global issue "Public-private partnerships in the area of drug precursors, non-scheduled chemicals and dangerous substances" can be found in the annual report of the Board for 2022.[17]

4. International cooperation in, and other international initiatives focusing on, precursor control

53. Various forms of cooperation with international and regional partners, including joint operational activities, ad hoc partnerships, collaboration in meetings and training initiatives and regular exchanges of expertise and know-how in areas of common interest, continued to play an important role during the reporting period. INTERPOL, UNODC and WCO, as well as the regional entities CICAD and the European Commission, are members of the INCB Precursors Task Force and cooperate on operational aspects of international precursor control. **INCB would like to acknowledge the contributions of all partners in advancing precursor control efforts worldwide.**

54. The partnership between INCB and **UNODC** continued to bring together the Board's expertise in precursor control and closer access to some regions and countries through UNODC country and regional offices. It also brought together elements of precursor control and some of the broader law enforcement initiatives of UNODC, such as the UNODC-WCO Container Control Programme. In addition, INCB continued to support the Paris Pact[18] expert group on precursors, including in relation to formulating related recommendations for national regulatory and law enforcement authorities and international agencies and to their implementation.

55. INCB and **WCO** continued to work together to ensure that a unique Harmonized System code is established for each precursor chemical under international control, pursuant to Economic and Social Council resolution 1992/29 (see para. 7 above). WCO, through the UNODC-WCO Container Control Programme, also remained an important operational partner during the reporting period, namely, in connection with devising and implementing a multilateral activity related to free zones (see para. 41 above).

56. The specific activities of regional partners such as **CICAD** and the **European Commission** complement and reinforce the Board's global approach and help to advance precursor control at the regional level.

III. Extent of licit trade and latest trends in trafficking in precursors

57. The present chapter provides an overview of the major trends and developments in both licit trade and trafficking in precursor chemicals, by substance group, with a view to addressing gaps and weaknesses in precursor control mechanisms. It summarizes information on seizures and cases of diversion or attempted diversion from international trade, as well as activities associated with illicit drug manufacture. The chapter is based on information provided to the Board through various mechanisms, such as form D, the PEN Online system, PICS, Project Prism and Project Cohesion, and through national reports and other official information from Governments. The analysis covers the period up to 1 November 2022.

58. The present chapter also provides information about substances not included in Table I or Table II of the 1988 Convention, which is reported to INCB pursuant to article 12, paragraph 12 (b), of the Convention. Governments also share such information through PICS. Data on non-scheduled chemicals are generally presented in dedicated subsections but may also be found in the sections providing details on trends with regard to substances in Table I and Table II of the 1988 Convention, especially in cases where the non-scheduled chemicals being discussed are part of a more complex development.

[17] E/INCB/2022/1.

[18] The Paris Pact initiative, led by the UNODC Paris Pact Coordination Unit, provides a multilateral framework for the fight against opiates originating in Afghanistan.

A. Substances used in the illicit manufacture of amphetamine-type stimulants

1. Substances used in the illicit manufacture of amphetamines

(a) Ephedrine and pseudoephedrine

59. Ephedrine and pseudoephedrine, both of which have legitimate medical applications, can also be used in the illicit manufacture of methamphetamine. However, methamphetamine can alternatively be manufactured from P-2-P, phenylacetic acid, APAAN, APAA, MAPA or a number of non-scheduled chemicals (see subsects. (c) and (d) below, and annex VIII). Because of their licit uses, both ephedrine and pseudoephedrine are traded widely.

Licit trade

60. Between 1 November 2021 and 1 November 2022, exporting countries sent 5,426 pre-export notifications through the PEN Online system for planned shipments of ephedrine and pseudoephedrine in bulk and in the form of pharmaceutical preparations. The notifications were for a total of approximately 1,290 tons of pseudoephedrine, which represents a slight increase in trade compared with the reporting years 2021 and 2020, and almost 73 tons of ephedrine. The shipments originated in 42 exporting countries and territories and were destined for 169 importing countries and territories.

Table 2. The 10 countries with the largest proposed imports of ephedrine and pseudoephedrine, by volume, 1 November 2021–1 November 2022

Ranking	*Ephedrine*	*Pseudoephedrine*
1	Republic of Korea	United States of America
2	Nigeria	Egypt
3	Egypt	Türkiye[a]
4	Indonesia	Indonesia
5	United States	Switzerland
6	United Kingdom of Great Britain and Northern Ireland	Pakistan
7	South Africa	Japan
8	Ghana	Republic of Korea
9	Switzerland	Italy
10	Singapore, Denmark	Singapore

[a]Since 31 May 2022, "Türkiye" has replaced "Turkey" as the short name used in the United Nations.

61. Table 2 presents the 10 countries with the largest volume of proposed imports of ephedrine and pseudoephedrine, ranked in terms of the volume notified through the PEN Online system, in the reporting period.

62. India stopped one shipment of 2,500 kg of ephedrine hydrochloride to Uganda. While the reasons for stopping the shipment were not available, it is noted that the annual legitimate requirements of Uganda for ephedrine amounted to only 1,000 kg.

Trafficking

63. Seizures of ephedrine and pseudoephedrine, either in the form of raw material or in the form of preparations, were reported on form D by 33 countries, about the same number as in 2020. That was among the lowest numbers of countries reporting such seizures in the last 10 years and barely three quarters of the number of countries that reported such seizures in 2019. Correspondingly, the quantity of ephedrines seized globally totalled 6.1 tons, the lowest quantity seized in the last 10 years, and was almost half of the quantity seized in 2020 (see figure 5). The overall declining trend in quantities of ephedrines seized contrasts remarkably with the increasing trend in quantities of methamphetamine seized[19] and is partly explained by the greater use by traffickers of alternative precursors, some of them designer precursors. This trend is now well established in Europe and is becoming increasingly significant in other parts of the world (see also paras. 104–116).

64. Of the total of more than 6.1 tons of ephedrines seized in 2021, seizures of ephedrine in the form of raw material accounted for more than 4 tons, a trend consistent with past years. China alone accounted for nearly 95 per cent of the quantity seized globally in 2021, having seized 3.8 tons. However, contrary to the overall declining trend in seizures of ephedrines, the quantity seized of pseudoephedrine in the form of preparations increased to more than 1.4 tons, which was more than twice the quantity seized in 2020. In fact, following a sharp decline after 2017, quantities seized of pseudoephedrine in the form of preparations have been growing consistently, and in 2021 more than tripled in comparison with the quantity seized in 2018 (see figure 6). While **medical preparations containing ephedrine and pseudoephedrine are not under international control, the Board encourages Governments to put in place adequate mechanisms to prevent the diversion of preparations containing chemicals listed in Tables I and II of the 1988 Convention, in particular those containing ephedrine and pseudoephedrine, as envisaged by the General Assembly in its resolution 59/162.**

[19]World Drug Report 2021, booklet 4, *Drug Market Trends: Cocaine, Amphetamine-type Stimulants* (United Nations publication, 2021).

Figure 5. Seizures of ephedrine and pseudoephedrine, as reported by Governments on form D, and of methamphetamine, as reported on the United Nations Office on Drugs and Crime annual report questionnaire, 2012–2021

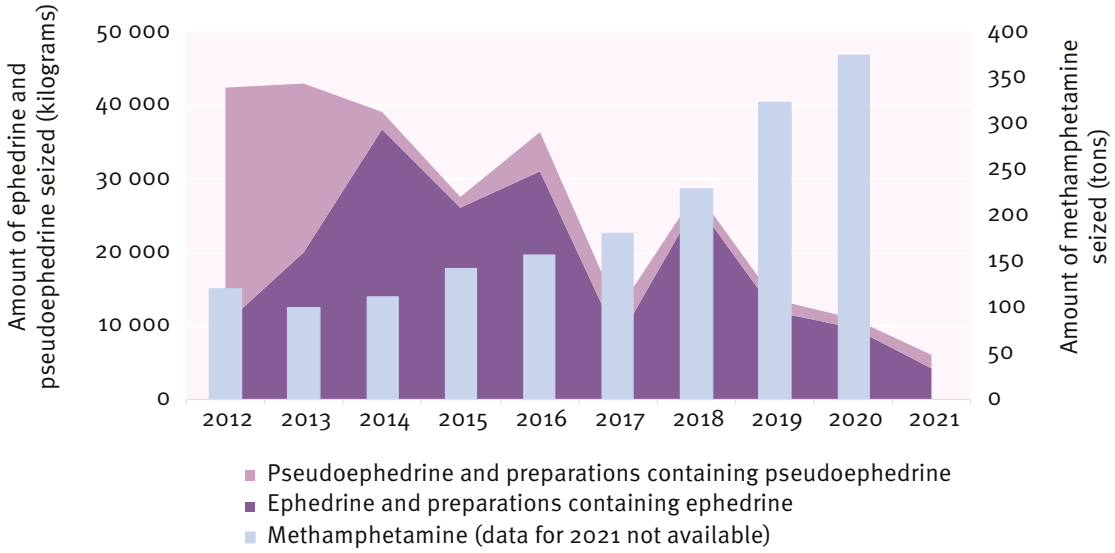
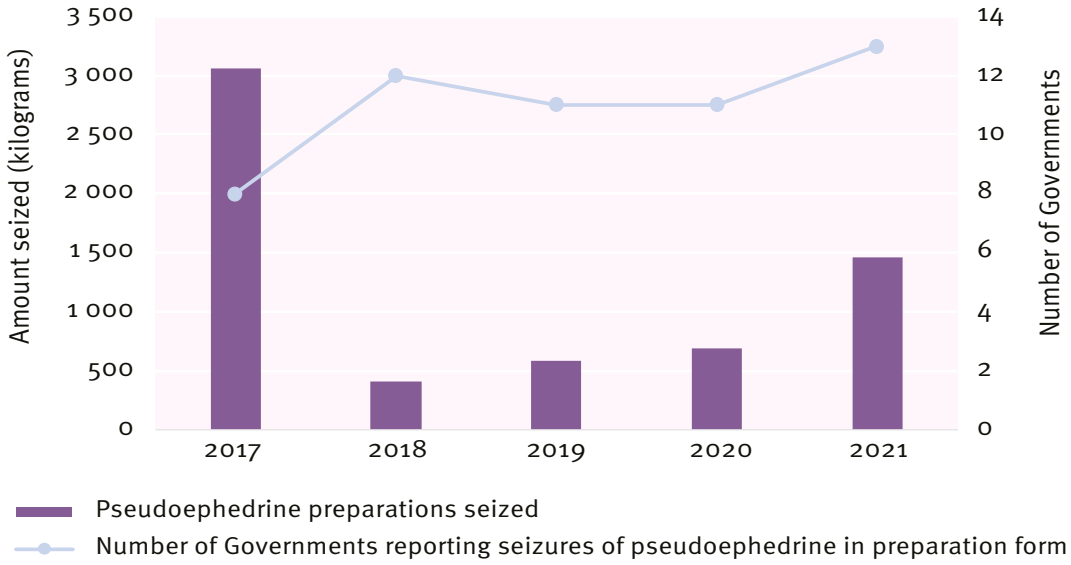


Figure 6. Seizures of pseudoephedrine preparations, as reported by Governments on form D, 2017–2021



65. There are wide regional variations in the quantities of ephedrine and pseudoephedrine seized globally. A regional analysis, beginning with Oceania and proceeding from east to west, is presented in the following paragraphs.

Oceania

66. Australia and New Zealand were the only countries in the Oceania region that reported seizures of ephedrines. Mirroring the global trend, the total of 578 kg of ephedrines reported seized in 2021 was only a fraction of the quantity of over 6.5 tons reported seized in 2017.

67. The bulk of the seizures occurred in Australia, which reported a total of more than 420 kg of pseudoephedrine preparations seized in 295 cases, and an additional 8.5 kg of ephedrine preparations seized in 40 cases. India was reported as the country of origin of 355 kg of pseudoephedrine preparations seized in 48 cases and 2.6 kg of ephedrine preparations seized in 4 cases. Whereas in the past, India has been reported as the country of origin of ephedrine and pseudoephedrine trafficked to Australia, in the reporting period, Australia shared three cases through PICS involving shipments of over 10 kg each of pseudoephedrine in December 2021, January 2022 and February 2022; the first two shipments were reported as having originated in Nepal and the last in Brunei Darussalam.

68. New Zealand showed a consistently declining trend in seizures of ephedrines, which is believed to be the primary class of precursor chemicals used in the manufacture of methamphetamine in that country. On form D for 2021, New Zealand reported seizures totalling 114 kg of ephedrine and 35 kg of pseudoephedrine in 76 and 68 cases, respectively, indicating the small size of individual shipments. In one case shared by India through PICS in March 2022 involving 1.9 kg of pseudoephedrine, the substance had been hidden in 50 rolls of metallic yarn destined for New Zealand and intercepted in India.

69. The data on seizures seem to indicate a clear trend of trafficking in ephedrine and pseudoephedrine in the form of raw material from India to Australia, and more recently to New Zealand, via postal or air cargo routes by concealing the substances in other goods or packing materials. **The Board encourages the Governments of Australia and India to jointly investigate such cases with a view to dismantling criminal networks in both countries.**

East and South-East Asia

70. China was the only country in East and South-East Asia to report seizures of ephedrines on form D for 2021. Totalling 3.8 tons, the quantity of ephedrines seized by China accounted for nearly two thirds of the total quantity of ephedrines seized globally.

71. While China remained the country reporting the largest quantity of ephedrine seized in the world, the quantity of 3.8 tons reported seized by China was barely half the quantity reported seized by that country in 2020 and a quarter of the quantity reported seized in 2018. In addition, China reported the seizure of 74 kg of pseudoephedrine in the form of raw material. The information about the number of incidents to which these seizures pertained, or whether the seized quantities were a result of illicit manufacture or of diversion from licit channels, was not available. However, the seizure of non-scheduled chemicals known to have been used as starting materials in the illicit manufacture of ephedrine in China (see para. 114 below) indicates that the ephedrine seized was likely a result of illicit manufacture. There were no reported seizures of preparations containing either ephedrine or pseudoephedrine. That contrasts with the period 2012–2019, when China reported seizures of ephedrine preparations in amounts ranging between 2 tons and more than 5.7 tons each year.

72. No other country in the region reported any seizure of ephedrine or pseudoephedrine in 2021. However, in its annual report for 2021, the Philippine Drug Enforcement Agency recorded seizures totalling 6.2 kg of ephedrine in 2021.[20] Furthermore, from media reports, the Board is aware of the purported seizure of 1.3 million pseudoephedrine tablets from a car and a truck in Sagaing, Myanmar, in August 2022. The country of origin in that case is believed to be India.

73. The decline in seizures of ephedrine and pseudoephedrine in the South-East Asian region corresponds with the decline in the number of methamphetamine laboratories reported dismantled in the region in recent years. These indicators are, however, contradicted by the overall increase in the quantity of methamphetamine seized in the region,[21] possibly pointing to a geographical shift in methamphetamine manufacture.

South Asia

74. India remained the only country in South Asia reporting seizures of ephedrine and pseudoephedrine. On form D for 2021, India reported five cases involving seizures totalling 79 kg (and 4 litres) of ephedrine in the form of raw material, representing less than a fifth of the quantity reported seized in 2020. The entire quantity seized had been sourced domestically. India also reported 19 cases involving seizures totalling 246 kg of pseudoephedrine. The majority of those cases were also shared by the Government through PICS. Analysis of PICS data for 2021 indicates that there were 27 cases involving a total of nearly 300 kg of ephedrine and pseudoephedrine. Of those cases, 13 involved attempted trafficking through postal, express courier or air cargo routes, and 3 involved quantities seized in illicit laboratories. Where the destination was known, 14 of the cases involved a total of 106 kg of pseudoephedrine destined for Australia (10 of which involved shipments on postal or air cargo routes and 4 of which involved seizures from commercial or industrial buildings) and 1 case involved a shipment of 24 kg of pseudoephedrine destined for Malaysia. In 2022, information was also shared through PICS about 14 incidents in India involving shipments of ephedrine and pseudoephedrine totalling 759 kg of the two substances; eight of the shipments were destined for Australia, four for New Zealand (see also para. 69 above) and one for the United Arab Emirates, the latter two countries being reported as destinations for the first time. Eight of the incidents involved postal or air cargo routes.

75. Information about the origin of ephedrine and pseudoephedrine seized in India, in particular whether it was diverted from licit manufacture or illicitly manufactured, is seldom available. In one case, official reports of a seizure

[20] Philippine Drug Enforcement Agency, *2021 Annual Report* (Quezon City, 2021), p. 32.

[21] World Drug Report 2021, booklet 4, *Drug Market Trends: Cocaine, Amphetamine-type Stimulants,* p. 53.

of nearly 662 kg of ephedrine in liquid form in India in July 2022 indicated that the substance had been illicitly manufactured in a closed pharmaceutical unit in the north of India that had been rented by traffickers (see also para. 115 below).

West Asia

76. In West Asia, the only reported seizures of ephedrines in 2021 were reported by Türkiye. The seizures were effected in 46 cases and amounted to a total of 2.13 kg of ephedrine raw material, indicating the small size of the individual amounts seized. In all of the cases, the country of origin was not known. In the last five years, among the countries in the region, only Afghanistan and Pakistan have reported seizures of ephedrines in excess of 1 kg; Afghanistan reported the seizure of 50 kg of pseudoephedrine in 2018 and of 440 kg of pseudoephedrine preparations in 2019, and Pakistan reported the seizure of 80 kg of ephedrine in 2019.

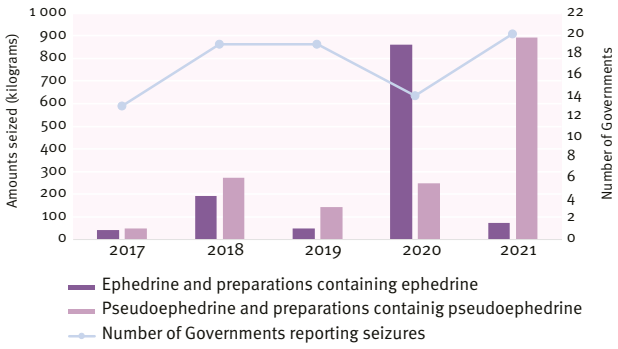
77. Jordan, which reported no seizures of pseudoephedrine hydrochloride, objected to three shipments containing a total of 972 kg (324 kg each) of the substance in preparation form, which was intended to be imported from Egypt, in October 2021. In each case, the importing company had not requested the shipment. That was the first time that any proposed export of pseudoephedrine from Egypt destined for Jordan had been pre-notified. Given the large quantities involved, the fact that the importing company had never requested the shipment made the attempted transaction suspicious and worthy of investigation by both the exporting country and the importing country. Another case involved a proposed shipment of 120 kg of pseudoephedrine in the form of a pharmaceutical preparation (1 million tablets), from Egypt to Georgia. Following the Board's inquiry, undertaken on the basis that that single proposed shipment had exceeded the annual legitimate requirements of Georgia, the authorities of Georgia confirmed that the importing company was not licensed to import the substance. However, since the objection had been conveyed after the time period mentioned in the pre-export notification, the shipment was allowed to proceed. The matter was still under investigation. The aforementioned instances provide continued evidence of the effectiveness of the PEN Online system in preventing the diversion of precursors from licit international trade.

78. Pre-notifications of planned shipments in excess of annual legitimate requirements indicated by importing countries also involved the United Arab Emirates. While having an annual legitimate requirement of 2,418 kg for pseudoephedrine preparations, the country was pre-notified of shipments totalling more than 3 tons by Egypt during the period September–December 2021. The three shipments of 324 kg each contained the same pharmaceutical preparations that had been objected to by Jordan (see para. 77 above).

Europe

79. Twenty Governments in Europe reported seizures of ephedrine and pseudoephedrine on form D, up from 14 that did so in 2020. Nearly 1 ton of ephedrines was reported seized, slightly less than the quantity of 1.1 tons seized in 2020 but far in excess of the quantities seized in the previous three years (see figure 7). The majority of the seizures, amounting to 894 kg of the total of 967 kg, were of pseudoephedrine and preparations containing pseudoephedrine. This contrasts with 2020, when ephedrine accounted for the majority of seizures (860 kg of the total of 1,108 kg). However, given that two cases in Poland together accounted for 808 kg out of the 860 kg of ephedrine seized in Europe in 2020, the trend in Europe in the last five years is predominantly of pseudoephedrine, more specifically, preparations of pseudoephedrine, which accounted for 869 kg out of the 894 kg of pseudoephedrine seized in Europe in 2021.

Figure 7. Seizures of ephedrine and pseudoephedrine, as reported by Governments in Europe on form D, 2017–2021



80. Bulgaria reported the largest quantity of pseudoephedrine preparations seized in Europe (317 kg), followed by Austria (259 kg), Ukraine (212 kg), Czechia (42 kg) and Poland (11 kg). The quantity seized in Bulgaria involved over 2.6 million tablets related to three cases, in all of which the country of origin was reported as Türkiye. **The Board encourages Governments to share details of the seizures reported, including the brand names of the seized preparations, as such details are helpful in follow-up investigations and in establishing possible linkages with other cases. Such information, if shared in a timely manner through PICS, can enable the detection of similar cases.**

81. For the first time in more than a decade, Austria reported the seizure of preparations containing pseudoephedrine, specifically, 2.16 million tablets under the trade name Decancit SR containing 120 mg of pseudoephedrine per tablet, corresponding to a total quantity of 259 kg of the substance. The shipment, whose last point of departure was Dubai, United Arab Emirates, was destined for a country in South-Eastern Europe. Investigations revealed that the stated recipient was a fake company and that its stated address did not exist. No documents or permits were provided. The Board became aware of seizures or stopped shipments of a pharmaceutical preparation containing pseudoephedrine under the same trade name in several countries in Eastern Europe, South-Eastern Europe, West and Central Europe and West Asia in the period 2021–2022. Investigations were ongoing.

82. Ukraine reported 367 cases involving the seizure of a total of 212 kg of pseudoephedrine preparations. The country of origin in 28 of those cases, involving a total of 71 kg of pseudoephedrine, was Israel, and in 29 of the cases, involving a total of 17 kg of the substance, was Egypt. Of those 17 kg, nearly 12 kg were seized in three incidents involving the seizure of tablets from passengers' luggage at an airport. The tablets had been removed from their original packaging and were suspected to have been diverted from legitimate channels in Egypt. In one case shared through PICS, over 100,000 tablets under the trade name Decancit SR were seized from a passenger's baggage. The Ukrainian nationals arrested in the case had flown to Egypt specifically for the purpose of purchasing pseudoephedrine. In addition, seizures of Decancit SR tablets at airports in Ukraine, from passengers arriving from Egypt, continued to be shared through PICS in 2022.

83. Czechia reported seizures totalling more than 42 kg of pseudoephedrine preparations in 59 cases. In seven of the cases, involving a total of about 4 kg of the substance, the country of origin was reported as Poland.

84. While seizures of non-scheduled chemicals are more frequently reported in relation to the illicit manufacture of amphetamine and methamphetamine in Europe, the increase in both the quantity of pseudoephedrine preparations seized and the number of countries reporting such seizures in 2021 may indicate that the interest among traffickers in the large-scale trafficking of pseudoephedrine preparations, a trend noted some 15 years ago, may have been renewed, including in countries not previously associated with such manufacture.

Africa

85. Nigeria was the only country in the African region that reported seizures of ephedrines, reporting a single seizure of 25.6 kg of ephedrine raw material on form D. The seizure was effected at the international airport in Lagos, Nigeria, and the substance was concealed in the false bottom of a suitcase. The destination was Johannesburg, South Africa. In 2018 and 2019, Nigeria reported seizures of ephedrine in excess of 300 kg, but since then seizures of the substance in the country have declined significantly. Furthermore, Ghana reported two instances of theft, one of 50 kg of ephedrine and the other of 25 kg of pseudoephedrine, both from a warehouse in a manufacturing facility. Investigations into both cases were ongoing.

86. In addition, the Board is following up on media reports of a seizure of 180 kg of ephedrine concealed in cornmeal bags in a warehouse in Mozambique.

87. Notwithstanding the negligible seizures of ephedrines reported by countries in Africa, the region is a major destination for imports of ephedrines, with four countries, namely, Nigeria, Egypt, South Africa and Ghana, in ranking order, appearing among the 10 countries receiving the most pre-export notifications for ephedrine worldwide in 2021 (see table 2 above). Egypt was also the second largest importer of pseudoephedrine in the world in 2021 and is also a major exporter of both substances in the form of pharmaceutical preparations.

88. Monitoring of the PEN Online system conducted by the Board with regard to pharmaceutical preparations containing pseudoephedrine resulted in the identification of suspicious shipments of preparations containing pseudoephedrine originating in a country in Africa and destined for countries in West Asia and East Africa. In one case involving six shipments totalling nearly 1 ton of pseudoephedrine preparations, the import certificate provided to the exporting country was later confirmed as having been forged. Following the case, the importing country requested that, as a matter of general practice, a copy of the import permit be attached with any pre-export notification in order to enable the importing country to verify the permit's authenticity. Further investigation was in progress in both the exporting and importing countries. The case points to the need for Governments to exercise due diligence before authorizing exports of scheduled precursors and to provide detailed information in the pre-export notifications. **The Board therefore encourages Governments in the region to remain vigilant about monitoring international trade in these substances in order to prevent their diversion for illicit purposes.**

Americas

89. The United States reported seizures amounting to less than half a kilogram of ephedrine and 23 kg of pseudoephedrine in 2021. In the years since 2019, when 195 kg of pseudoephedrine and 6 kg of ephedrine were seized, the quantities seized of these substances have not exceeded 30 kg.

This supports the belief that the methamphetamine market in the United States is supplied from large-scale laboratories that use P-2-P-based methods. Mexico too follows a similar pattern, having reported practically no seizures of ephedrine or pseudoephedrine for the last five years. In the years since 2019, when Canada reported the seizure of 750 kg of ephedrine, the country has reported no significant seizures of ephedrines.

90. Of the countries in Central America and the Caribbean, Guatemala reported one case involving the seizure of 155 kg of ephedrine in the form of preparations and two cases involving the seizure of 162 kg of pseudoephedrine, also in the form of preparations.

91. Of the countries in South America, only Chile reported a small seizure of less than half a kilogram of ephedrine. No seizures, either of ephedrine or pseudoephedrine, were reported by any other country in the region, which follows the trend noted in 2020.

(b) Norephedrine and ephedra

Licit trade

92. Between 1 November 2021 and 1 November 2022, pre-notifications were processed through the PEN Online system by 13 exporting countries for 202 shipments of norephedrine to 33 importing countries, involving more than 37 tons of raw material and slightly more than 1.3 tons in the form of pharmaceutical preparations. Shipments amounting to 1 ton or more were pre-notified to the following importing countries, in descending order of the amounts shipped: United States, Myanmar, Philippines, Denmark and Japan. Overall, international trade in norephedrine, a substance that can be used in the illicit manufacture of amphetamine, continued to remain at a low level compared with trade in other precursors of amphetamine-type stimulants.

Trafficking

93. Only Australia and Belarus reported seizures of norephedrine on form D for 2021. Australia reported eight cases involving a total of less than 150 grams of the substance and Belarus reported three cases involving a total of about 50 grams. The total quantity reported seized globally in 2021 was less than the total quantities reported seized in the last five years and the second lowest in the last 10 years, indicating the decreasing use of the substance for the illicit manufacture of amphetamine.

94. Only China reported seizures of *Ephedra* plant on form D for 2021. After having reported seizures of *Ephedra* plant in excess of 100 tons in 2019 and 2020, China reported seizures totalling about 30 tons of the plant in 2021. No further details of the seizures were provided. In addition, one seizure of 10 kg of ephedra was shared by Czechia through PICS in December 2021. The seizure was effected at an airport, and the consignment, which had originated in China, had been misdeclared as green tea.

95. In recent years, there has been increasing concern about the use of ephedra as a starting material for illicit methamphetamine manufacture in Afghanistan. While no reliable data are available regarding the extent of such use, research and field studies suggest that enough ephedra to manufacture 220 tons of methamphetamine was traded at one of the major bazaars in south-western Afghanistan.[22]

(c) P-2-P, phenylacetic acid, APAAN, APAA and MAPA

96. As P-2-P and phenylacetic acid are traded legitimately, albeit with differences in the extent of their trade, instances of their diversion from legitimate trade have been rare in recent years. Seizures of the two substances often involve material that has been illicitly manufactured from one of their precursors. By contrast, APAAN, APAA and MAPA are considered to be designer precursors that are traded in very limited quantities or not at all. The availability of APAAN, APAA and MAPA on illicit markets is therefore typically the result of illicit demand and availability from dubious sources, including companies that may have been unknowingly targeted by traffickers as providers of customized synthesis.

97. There are a number of as yet non-scheduled alternatives to P-2-P and other controlled precursors that are used in the illicit manufacture of amphetamine and methamphetamine (see figure 8 and subsect. (d) below).

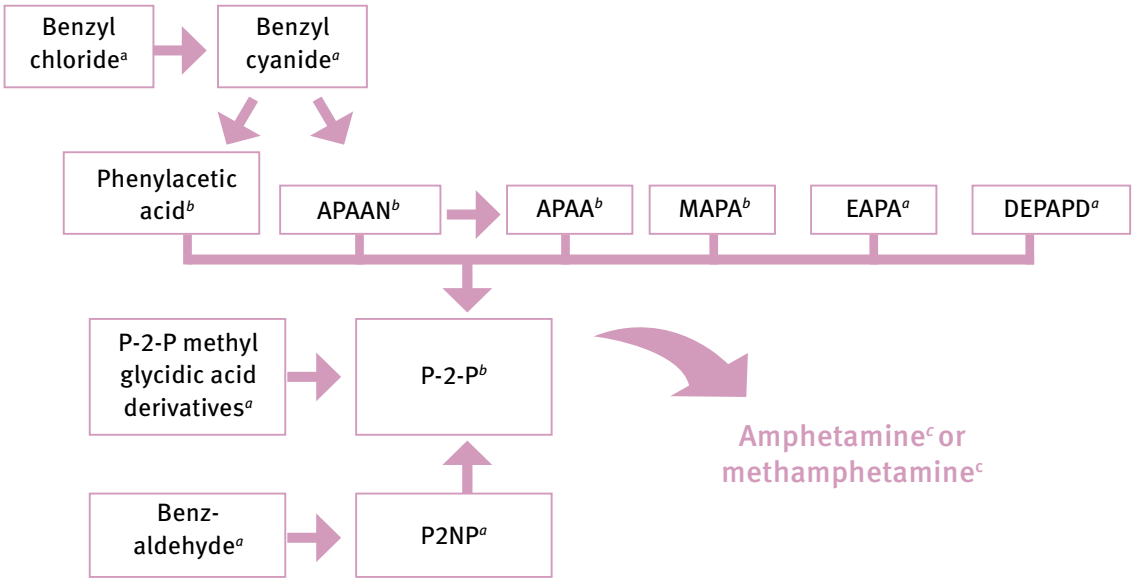
Licit trade

98. Between 1 November 2021 and 1 November 2022, proposed international trade in P-2-P and phenylacetic acid remained at a level similar to that of previous years. Twenty-two proposed shipments of P-2-P, from three exporting countries to seven importing countries, and about 776 proposed shipments of phenylacetic acid, from 18 exporting countries to 45 importing countries and territories, were pre-notified through the PEN Online system.

99. By contrast, there have been no pre-export notifications for APAAN or APAA and three pre-export notifications for MAPA since November 2021. All of the transactions notified through the PEN Online system involved small amounts for reference and laboratory purposes.

[22] The conclusion is based on high-resolution satellite imagery of the Abdul Wadood Bazaar collected on 26 November 2021 (see David Mansfield, "Banning ephedra and bolstering the rural economy of Afghanistan", Alcis, 13 January 2022).

Figure 8. Alternative chemicals used in the illicit manufacture of amphetamine or methamphetamine



[a]Not under international control but included in the limited international special surveillance list.
[b]Included in Table I of the 1988 Convention.
[c]Included in Schedule II of the Convention on Psychotropic Substances of 1971.

Trafficking

100. In 2021, 14 countries reported seizures of **P-2-P** amounting to a total of more than 11,800 litres on form D. Both the number of countries reporting seizures and the amounts reported were smaller than those in 2020. The largest total amount of the substance seized was reported by Türkiye (more than 4,200 litres), followed by the Netherlands (almost 4,000 litres), Mexico (more than 2,500 litres), Belgium (665 litres) and Germany (almost 300 litres). With regard to **phenylacetic acid**, China reported seizures on form D for 2021 amounting to 12 tons. That was the largest amount reported seized by any country since 2017, when Mexico alone reported the seizure of almost 19.5 tons of the substance in illicit methamphetamine laboratories. Unfortunately, neither country provided any information about the origin of the chemical, including whether it had been illicitly manufactured (see para. 110 below) or diverted from legitimate channels. **The Board encourages Governments to distinguish between the two scenarios and to investigate the source of seized precursors and share the relevant details through PICS and report them on form D, as this will enable the most appropriate follow-up to address the underlying weaknesses.**

101. On form D for 2021, six countries in Europe and Australia reported seizures of **MAPA**. The total amount of about 9.7 tons reported seized was only about 30 per cent of the amount reported seized in 2020. The decline confirmed the trend observed in relation to other designer chemicals, namely, the tendency for seizures of a substance to cease after the substance is placed under international control. In 2021, the largest quantity seized of MAPA was reported by the Netherlands (more than 6 tons), followed by Belgium (more than 2.2 tons) and Germany (more than 1.3 tons). Where information was available, the country of origin was reported to be China, including Hong Kong, as in the past. The Republic of Korea and countries in Europe were used as transit countries. While shipments from Asia to Europe were dispatched by air, shipments within Europe, typically with the Netherlands as the final destination, were often dispatched by road. Most consignments of MAPA had been misdeclared. Some seizures were made after controlled deliveries had been conducted between the countries concerned.

102. The Netherlands was also the only country to report a seizure of **APAA** (50 kg) in 2021. There were no reported seizures of **APAAN**.

103. In 2022, additional seizures of these chemicals were communicated through PICS. The amounts were considerably smaller than in previous years, with seizures of MAPA in the first 10 months of 2022 involving about 350 kg, less than 3 per cent of the amount seized in the corresponding period in 2021. At the same time, seizures communicated through PICS in 2022 also indicated a significant increase in the number of incidents and the amounts involving non-scheduled alternative precursors (see subsect. (d) below).

(d) Use of non-scheduled chemicals and other trends in the illicit manufacture of amphetamine and methamphetamine

104. As in previous years, in terms of volume, a significant amount of the non-scheduled chemicals encountered in connection with the illicit manufacture of amphetamine and methamphetamine consisted of purpose-made designer precursors, closely related in chemical structure to chemicals in Tables I and II of the 1988 Convention that can be converted into the related controlled chemical by readily applicable means. In addition, countries continued to report various common chemicals that were available off the shelf. The majority of chemicals in both categories have long been included in the limited international special surveillance list of non-scheduled substances, either listed by name or covered by the extended definitions, as well as in other regional or national watch lists, as substitutes for controlled precursors.

Derivatives of P-2-P methyl glycidic acid and *alpha*-phenylacetoacetic acid

105. On form D, the Netherlands was the only country to report notable seizures of non-scheduled designer precursors of amphetamine and methamphetamine, namely, **P-2-P methyl glycidic acid derivatives** (more than 730 kg) and **EAPA**, the ethyl ester analogue of MAPA (85 litres). Those amounts were a fraction of the amounts seized between 2017 and 2019.

106. In the first 10 months of 2022, 37 incidents involving P-2-P methyl glycidic acid derivatives were communicated through PICS, amounting to more than 10 tons. All of the incidents were communicated by countries in Europe. Fifteen incidents occurred in illicit laboratories or warehouses in the Netherlands and 21 incidents involved border seizures at airports or postal or parcel facilities in Czechia, Germany and the United Kingdom, of which seven were linked by a common modus operandi. Another six were linked by a common misdeclaration. In the majority of instances, China, including Hong Kong, was identified as the country of origin. Investigations in the countries concerned were ongoing. The resurgence of P-2-P methyl glycidic acid derivatives, which have been controlled in all States of the European Union since December 2020, is believed to be the result of enhanced law enforcement focus and risk profiling by customs authorities.

107. In early 2022, a new alternative precursor of amphetamine and methamphetamine emerged in the Netherlands. The substance is known as **DEPAPD**, or **diethyl (phenylacetyl)propanedioate**. While not under international control, it has been included in the Board's limited international special surveillance list, under the extended definitions, as a derivative of P-2-P. In the first 10 months of 2022, there were two occurrences in the Netherlands, one in a express courier shipment with no labelling, and the second in an illicit laboratory where 12 litres of the substance were seized. Later in 2022, a derivative of DEPAPD was also encountered. The emergence of DEPAPD and its derivative provides further evidence supporting the Board's call to address groups of substances that are closely related chemically. **The Board wishes to call the attention of Member States to the efficiency of extending control to entire groups of chemicals wherever possible, rather than controlling individual substances, which are often easily replaced by traffickers.**

Benzaldehyde, nitroethane and 1-phenyl-2-nitropropene

108. Seizures of chemicals involved in the so-called nitrostyrene method for the manufacture of P-2-P and, subsequently, methamphetamine or amphetamine, continued to be reported on form D. In 2021, four countries reported seizures of **benzaldehyde**, **nitroethane** and/or **P2NP**, the chemical intermediate derived from the reaction between benzaldehyde and nitroethane. The seizures often occurred in illicit laboratories, which were typically of small scale. In 2021, the largest seizures were reported by the Russian Federation, amounting to more than 1 ton of benzaldehyde. The lack of notable seizures of these chemicals in Mexico confirms the continued decline in the use of the nitrostyrene method in the country since 2017. This is likely the result of the rising cost of the related chemicals and the availability of alternative chemicals for other methods of illicit methamphetamine manufacture, especially phenylacetic acid-based methods (see para. 109 below).

Benzyl chloride, sodium cyanide and benzyl cyanide

109. **Benzyl cyanide** is the chemical intermediate derived from the reaction between **benzyl chloride** and **sodium cyanide** and may also be encountered as a starting material in illicit laboratories. The reaction may then proceed by way of APAAN or phenylacetic acid to P-2-P and, subsequently, methamphetamine or amphetamine (see figure 8 above).

110. On form D, six countries in the Americas, Asia and Europe reported seizures of benzyl chloride, sodium cyanide and/or benzyl cyanide. The largest amounts of benzyl cyanide were seized in China (about 3,800 litres) and the Netherlands (about 2,000 litres), followed by Mexico (585 litres). Serbia reported a seizure of more than 16,500 litres of benzyl chloride – the third largest amount of the

substance ever reported seized – from a private property in a town in eastern Serbia. Mexico was the only other country to report seizures of benzyl chloride, however, the amount (more than 350 litres) was significantly smaller than the amounts reported by the country in the period 2017–2020. There were no reported seizures of phenylacetic acid or APAAN in Mexico (see paras. 100–103 above). However, forensic profiling analysis of methamphetamine samples seized at points of entry into the United States from Mexico continues to provide evidence of the use of P-2-P-based synthesis methods and of phenylacetic acid as the primary precursor of P-2-P.

Other chemicals not under international control that were seized in relation to the clandestine manufacture of amphetamine or methamphetamine[23]

111. Seizures of **tartaric acid** in regions known for illicit methamphetamine manufacture are a strong indicator of the use of P-2-P-based methods. As a separating agent, tartaric acid is used to increase the yield of the desired "*d*" form of the drug.[24] Tartaric acid is also used for similar purposes in the illicit manufacture of ephedrine from 2-bromopropiophenone or its precursor propiophenone (see para. 115 below).

112. Seizures of tartaric acid have been reported by Mexico regularly since 2009, when manufacturing methods in the country shifted from ephedrines-based to P-2-P-based methods. Recently, the quantities of tartaric acid seized in Europe have surpassed the quantities seized in North America, although they remain at levels lower than those previously reported in Mexico. The seizures of tartaric acid in Europe coincide with the increase in illicit methamphetamine manufacture in that region.

113. On form D, the only notable seizures of tartaric acid were reported by the Netherlands (almost 4 tons) and Belgium (about 580 kg). Through PICS, the focal point in the Netherlands communicated seizures of tartaric acid amounting to almost 1.2 tons in the first 10 months of 2022.

114. Seizures of tartaric acid in countries in East and South-East Asia may provide supporting evidence for the spread of P-2-P-based methods for illicit methamphetamine manufacture in that region. However, tartaric acid has also been associated with illicit ephedrine manufacture, specifically with a manufacturing method that uses **2-bromopropiophenone** or its precursor **propiophenone**. On form D, China reported seizures amounting to more than 1.9 tons of propiophenone.

115. INCB is also aware of an incident involving the illicit manufacture of ephedrine from propiophenone in India in July 2022. In addition to seizures of other chemicals required to convert propiophenone into ephedrine, the seizure of tartaric acid indicates that illicit operators had manufactured the form of ephedrine that would subsequently yield the more potent "*d*" form of methamphetamine. The level of sophistication of the manufacturing operation is also reflected by the fact that it took place in the premises of a closed pharmaceutical company that had been rented by traffickers. All chemicals and equipment needed for the operation appeared to have been procured domestically.

116. Seizures of chemicals involved in ephedrines-based methods of illicit methamphetamine manufacture, namely, the so-called Nagai method, were reported on form D by a number of countries in all regions but Africa. However, the seizures were usually indicative of smaller-scale manufacturing operations. Notable seizures of one or more of the chemicals, in particular **phosphoric acid**, were reported by Belgium and the Netherlands. In terms of the number of seizures, Czechia continued to be one of the countries reporting frequent seizures of **iodine**, **red phosphorous** and phosphoric acid. There were no seizures of **thionyl chloride**, a substance indicative of the so-called Emde method, which involves the use of chloropseudoephedrine as an intermediate and which used to be widely employed in East and South-East Asia. Since many of these chemicals are traded and distributed widely for legitimate purposes, **the Board encourages Governments of countries in which the illicit manufacture of methamphetamine or ephedrine has been encountered to consider determining whether trade in and distribution of the chemicals are commensurate with legitimate needs and/or whether there have been any recent suspicious increases in that regard. Also, the authorities of countries exporting any of the above-mentioned chemicals are invited to use, on a voluntary basis, the Board's recently launched PEN Online Light system to notify the authorities of importing countries of any planned shipments of the chemicals.**

2. Substances used in the illicit manufacture of MDMA and its analogues

117. The relevance of the traditional precursors of MDMA (commonly known as "ecstasy") included in Table I of the 1988 Convention (3,4-MDP-2-P, piperonal, safrole and isosafrole) for the illicit manufacture of MDMA has decreased significantly, in parallel with an increase in

[23] See also paras. 128–130, on methylamine.

[24] For details, see the INCB report on precursors for 2020 (E/INCB/2020/4), figure IX.

seizures of non-scheduled chemicals. Some of those chemicals, namely, 3,4-MDP-2-P methyl glycidic acid derivatives, have since been placed under international control. A schematic overview of the alternative chemicals used in the illicit manufacture of MDMA and related "ecstasy"-type substances is shown in figure 9.

(a) 3,4-MDP-2-P, 3,4-MDP-2-P methyl glycidate, 3,4-MDP-2-P methyl glycidic acid and piperonal

Licit trade

118. Between 1 November 2021 and 1 November 2022, 16 exporting countries and territories notified the authorities of 54 importing countries and territories of approximately 800 proposed exports of piperonal. The number of both exporting countries and importing countries in that period remained about the same as in previous years. No trade in 3,4-MDP-2-P, 3,4-MDP-2-P methyl glycidate or 3,4-MDP-2-P methyl glycidic acid was reported. On form D, China reported having stopped three shipments of piperonal to three different countries, amounting to a total of more than 1,600 tons. Unfortunately, no further details were provided.

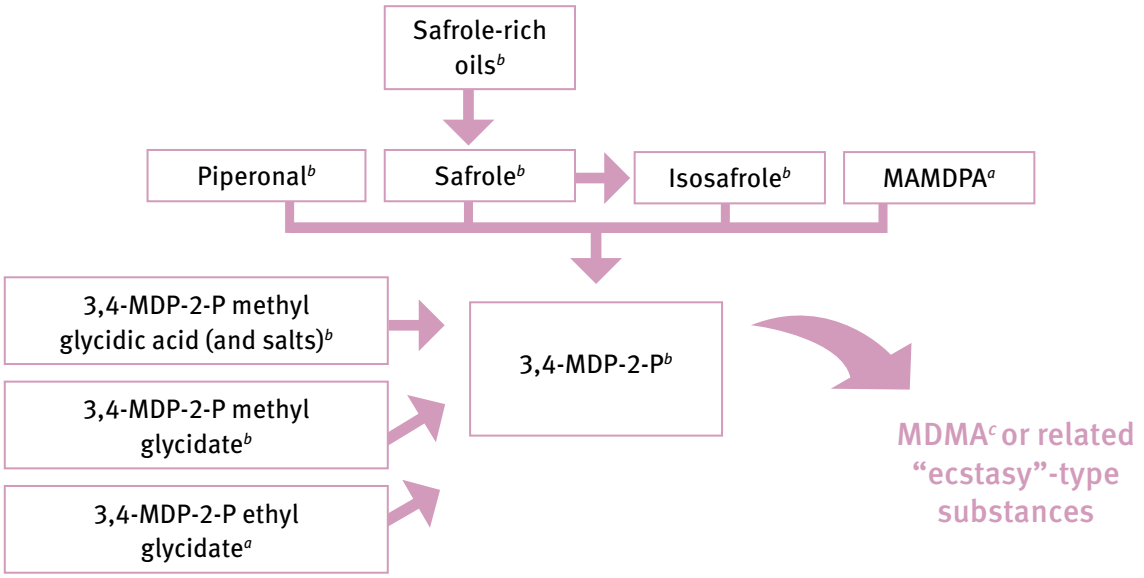
Trafficking

119. In 2021, the amounts seized of **3,4-MDP-2-P methyl glycidic acid derivatives** continued to be the largest among all the precursors of MDMA under international control. However, comprising a total of about 1.2 tons, they were significantly smaller than the amounts seized during the period 2014–2019, that is, prior to the placing of those substances under international control. Seizures of **3,4-MDP-2-P** amounted to almost 900 litres. As in the past, the bulk was in the form of a chemical intermediate seized from illicit laboratory settings in which it had been manufactured illicitly from one of its precursors, and had not been diverted from legitimate channels. Most of the seizures occurred in the Netherlands.

120. On form D, Ukraine reported seizures of 150 kg of **piperonal**, the largest amount of the substance reported seized worldwide since 2016. No further details were provided.

121. Incidents involving 3,4-MDP-2-P methyl glycidic acid derivatives continued to be reported through PICS in 2022. INCB is aware of seizures of such derivatives totalling more than 1.4 tons in the first 10 months of 2022. In addition, new non-scheduled alternatives started to emerge and were seized in amounts exceeding those of the above-mentioned chemicals. All of the incidents occurred in Europe and often involved similar modi operandi that triggered bilateral and multilateral investigations among the countries concerned (see subsect. (c) below).

Figure 9. Alternative chemicals used in the illicit manufacture of MDMA and related "ecstasy"-type substances



[a]Not under international control but included in the limited international special surveillance list.
[b]Included in Table I of the 1988 Convention.
[c]Included in Schedule I of the 1971 Convention.

(b) Safrole, safrole-rich oils and isosafrole

Licit trade

122. Between 1 November 2021 and 1 November 2022, six exporting countries sent 27 pre-export notifications regarding safrole to the authorities of 12 importing countries and territories through the PEN Online system. The notifications concerned a total volume of approximately 17 litres, while pre-export notifications for safrole-rich oils concerned a total of approximately 192 litres. There were two pre-export notifications for isosafrole during that period, involving a total of about 280 litres, all destined for countries in South America.

Trafficking

123. The trafficking situation regarding safrole, safrole-rich oils and isosafrole remained unchanged, with only three Governments reporting seizures of the substances on form D for 2021. All of the reported seizures involved safrole and totalled less than 50 litres. In the first 10 months of 2022, four incidents involving the substance were communicated through PICS. They amounted to a total volume of 480 litres, of which 375 litres were seized in a single incident in a warehouse in the Netherlands. Two of the other incidents also occurred in the Netherlands, and one in Cambodia, and did not involve any border seizures that produced actionable information.

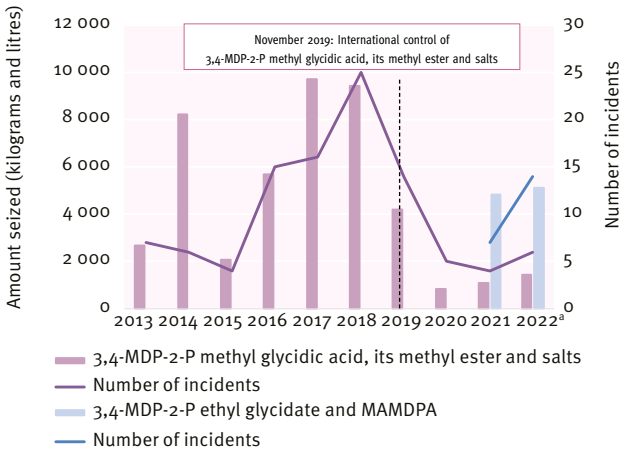
(c) Use of non-scheduled chemicals and other trends in the illicit manufacture of MDMA and its analogues

124. The evolution of precursors of MDMA and of related "ecstasy"-type substances is a reflection of the evolution of precursors of other synthetic drugs: soon after their international scheduling, or even around the time at which the scheduling process is initiated, there is a decrease in the amounts seized and the number of incidents involving the chemicals, accompanied by the emergence of alternative precursors that are often very closely related chemically (see figure 10).

125. On form D for 2021, authorities in the Netherlands reported seizures of almost 4.5 tons of **MAMDPA**, a substance that had emerged as an alternative to controlled precursors of MDMA in mid-2021 and was the subject of communications through PICS at that time. Chemically, MAMDPA is the "ecstasy"-type analogue of MAPA, a designer precursor of amphetamine and methamphetamine that was added to Table I of the 1988 Convention in November 2020. The close chemical relationship between MAMDPA and MAPA is another reminder to proactively consider substance groups rather than individual substances in order to ensure an effective precursor control regime, as recommended in Commission on Narcotic Drugs resolution 65/3.

126. In late 2021, authorities in the Netherlands also started to encounter another alternative chemical, namely, **3,4-MDP-2-P ethyl glycidate**, which is closely related to 3,4-MDP-2-P methyl glycidate and the corresponding acid, which were both placed in Table I of the 1988 Convention in November 2019. Seizures of the substance occurred in several series of shipments, with each series having been characterized by a number of common features, such as the name under which the shipments were misdeclared, their routing, and/or details regarding the shipper or consignee. The Board issued a number of alerts related to the incidents, all but two of which had occurred in the Netherlands. Where such information was available, the country of origin was China. **The Board would like to reiterate its request formulated in the alerts, for Governments to be vigilant and to consider carrying out the risk profiling of shipments of non-scheduled chemicals using the information provided in the alerts. This practice would allow the identification of additional consignments with similar characteristics that may be on their way and would help to generate sufficient evidence of the illicit use of the substances, enabling countries of origin, transit and destination to act, seize relevant consignments and build cases to prosecute those behind such illicit use.**

Figure 10. Incidents communicated through PICS involving 3,4-MDP-2-P methyl glycidic acid derivatives under international control and non-scheduled alternatives, 2013–2022



[a] The data only cover the first 10 months of 2022.

3. Other trends in the illicit manufacture of amphetamine-type stimulants

127. A number of chemicals not included in the tables of the 1988 Convention but frequently reported on form D can be used in the illicit manufacture of different amphetamine-type stimulants, synthetic cathinones and other new psychoactive substances, and/or certain precursors, such as ephedrine and pseudoephedrine. They typically include a number of versatile chemicals, solvents and reagents that are often diverted from domestic channels.

Methylamine

128. Methylamine is used widely for various legitimate purposes, including in fine chemical synthesis and in the pharmaceutical industry. It is required in the illicit manufacture of several amphetamine-type stimulants (e.g. methamphetamine and MDMA) and synthetic cathinones, as well as ketamine, and ephedrine and pseudoephedrine.

129. In 2021, the largest quantity of methylamine seized was reported by the United States (approximately 24.5 tons of methylamine hydrochloride in a single incident), followed by the Netherlands (almost 12 tons in 18 incidents involving illicit laboratories or warehouses) and Mexico (more than 1,400 litres in 4 incidents). Poland reported seizures totalling more than 530 litres in 7 incidents, associated with the illicit manufacture of mephedrone and 4-CMC (clephedrone). The bulk of methylamine seized in Austria (125 kg) was also reported to have been encountered in an illicit mephedrone laboratory. There were no notable seizures of precursors of methylamine in 2021 (see also para. 174 below). On form D, Panama referred to a seizure of 891 bags of methylamine hydrochloride in 2018. The Government was still in the process of ensuring the lawful disposal of the chemical.

130. During the first 10 months of 2022, seizures totalling more than 4,800 litres of methylamine and more than 2 tons of methylamine hydrochloride were communicated through PICS. With the exception of one incident in Australia, all of the seizures occurred in the Netherlands, mostly in illicit laboratories or warehouses. **The Board encourages Governments to be vigilant as to the possible diversion of methylamine, including from domestic distribution channels**.

Hydrogen gas

131. Since 2015, Germany has regularly reported thefts of hydrogen gas from company premises (see figure 11). Hydrogen gas can be used as a reducing agent in the illicit manufacture of several synthetic drugs. The gas stolen in Germany is believed to be for use in the illicit manufacture of MDMA, mainly in the Netherlands but also in Belgium, as evidenced by empty gas cylinders found in illicit laboratories and warehouses in those countries.

132. Thefts in Germany and seizures in the Netherlands of hydrogen gas also continued to be communicated through PICS in 2022. The total amount of hydrogen gas reported stolen in the first 10 months of 2022 exceeded the total amount reported stolen on form D for 2021 by almost 50 per cent.

Figure 11. Thefts of hydrogen gas, as reported on form D by Germany, 2015–2021

Other chemicals not under international control

133. On form D for 2021, five countries reported seizures of **formamide**, **formic acid** and/or **ammonium formate**, chemicals associated with the so-called Leuckart method of illicit manufacture. The Leuckart method can be used to manufacture amphetamine and methamphetamine from P-2-P or related designer precursors, or to manufacture MDMA and its analogues from 3,4-MDP-2-P or related designer precursors. As in previous years, the largest amounts of such chemicals were seized in illicit laboratories and warehouses in Europe. The Netherlands, Belgium, Spain and Germany, in descending order of amounts seized, reported the largest seizures of those substances. Overall seizures amounting to 26,000 litres and kilograms combined in 2021 continued a declining trend from a peak in 2019 (86,000 litres and kg combined).

134. During the reporting period, INCB also became aware of additional seizures of "masked", or chemically protected, derivatives of synthetic drug end products, namely, amphetamine-type stimulants. While seizures of those derivatives had initially occurred in Australia around 2015, the substances were later also encountered in China, the Netherlands, New Zealand and the United States. The amounts seized were indicative of distribution at both the wholesale and retail levels. In 2022, Chile communicated an incident involving *t*-boc-MDMA through PICS.

B. Substances used in the illicit manufacture of cocaine

1. Potassium permanganate

135. Potassium permanganate is the principal oxidizing agent used in the illicit manufacture of cocaine. Most of the cocaine that is seized continues to be highly oxidized.[25]

Licit trade

136. Between 1 November 2021 and 1 November 2022, the authorities of 35 exporting countries and territories sent 1,823 pre-export notifications to 115 importing countries and territories relating to a total of more than 28,300 tons of potassium permanganate, which represents about 20 per cent less trade in the substance compared with the previous reporting year. The main exporter was China, followed by India and the United States.

137. There was a small increase in the share of imports of potassium permanganate reported by the three coca-producing countries in South America (Bolivia (Plurinational State of), Colombia and Peru), which together accounted for 1.3 per cent, compared with less than 1 per cent reported in the previous year. Imports of the substance by other countries in South America amounted to about 5 per cent, or about 1,400 tons. Of those countries, and similar to previous years, only Argentina, Brazil and Chile had pre-notified exports of potassium permanganate, in small amounts.

138. On form D for 2021, China reported having stopped 14 exports involving a total of almost 2,400 tons of potassium permanganate destined for 12 countries. The United Republic of Tanzania objected to four imports of a total of 5.6 tons of the substance, and Jordan to a total of about 95 kg, because no import authorization had been issued.

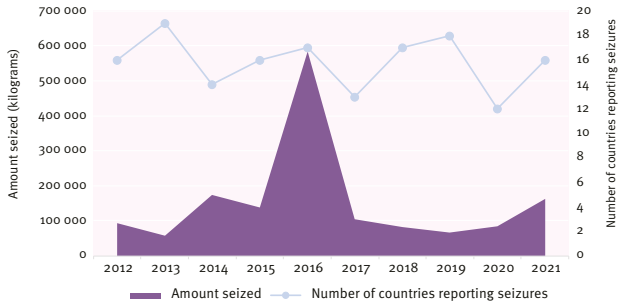
Trafficking

139. On form D for 2021, 16 countries reported seizures of potassium permanganate, including 6 countries in Europe. With the exception of an outlier in 2016, the amounts reported have remained at an average of approximately 100 tons per year for the past 10 years (see figure 12). For many years, Colombia has reported the largest amounts seized. In 2021, seizures in Colombia totalled more than 135 tons, more than twice the amount seized in the country in 2020. Seizures amounting to more than 1 ton were also reported by China (almost 18.6 tons, an amount more than 10 times the amount seized in the country in 2020), Chile (more than 5.8 tons) and Peru (almost 1.5 tons, which was almost twice the amount seized in the country in 2020). Seizures of potassium permanganate in Europe were also on the rise, albeit in smaller amounts, mirroring an increase in illicit cocaine laboratories and chemical warehouses in that region.[26] By contrast, the amounts seized in Bolivia (Plurinational State of) and Venezuela (Bolivarian Republic of) were significantly smaller than the amounts seized in 2020.

[25] Continuing the trend identified in previous years, results from the Cocaine Signature Program of the United States Drug Enforcement Administration Special Testing and Research Laboratory indicate that less than 1 per cent of the cocaine samples examined, from seizures in 2021 in the United States, were moderately or not oxidized.

[26] These laboratories are known as secondary extraction laboratories, or cocaine "washing" laboratories, where cocaine is recovered after being mixed with, or incorporated into, other substances for the purpose of smuggling. In addition, there are laboratories for the conversion of cocaine base into hydrochloride salt. On the basis of the chemicals seized, cocaine laboratories have to date been identified in Belgium, Italy, the Netherlands and Spain. The required chemicals include acids and solvents listed in Table II of the 1988 Convention, non-scheduled substitutes, such as acetate solvents, and bases. Most of the chemicals are sourced from within the European common market.

Figure 12. Seizures of potassium permanganate, as reported by Governments on form D, 2012–2021



140. As in the past, countries in South America typically indicated diversion from domestic distribution channels as the source of potassium permanganate. In Colombia, illicit manufacture continued to be another notable source of the substance, as evidenced by seizures of precursors and substitutes of potassium permanganate (see para. 142 below).

2. Use of non-scheduled chemicals and other trends in the illicit manufacture of cocaine

141. Each year, chemicals not under international control represent a significant portion of the cocaine chemicals reported seized on form D. They can be classified in the following groups: *(a)* precursors of and substitutes for potassium permanganate; *(b)* chemicals that help to improve the efficiency of the manufacturing process, such as sodium metabisulfite and calcium chloride; *(c)* a variety of common acids, bases and solvents used in the extraction of cocaine base from coca leaves and for the conversion of cocaine base into hydrochloride; and *(d)* chemicals used to illicitly manufacture controlled precursors used in cocaine processing. Most of these chemicals are sourced domestically.

142. Countries in South America in particular have a number of additional substances under national control. For example, Colombia controls 25 substances in addition to those under international control, many of which are related to cocaine processing. Seizures involving 24 of them were effected in 2021. On form D, Colombia continued to be the only country reporting seizures of precursors of potassium permanganate. Specifically, there was one incident involving 250 kg of **manganese dioxide** (pyrolusite) and three incidents involving a total of more than 18.5 tons of **potassium manganate**. Since the latter is an intermediate in the manufacture of potassium permanganate from manganese dioxide, a proportion of the amount seized may have been manufactured illicitly.

143. Seizures of these chemicals in Colombia also corroborate information about the dismantling of sites for the illicit manufacture of potassium permanganate in that country. According to the Colombian Drug Observatory,[27] in the period 2017–2021, between 7 and 10 such sites were dismantled in Colombia every year. In the first 10 months of 2022, eight potassium permanganate laboratories were dismantled.

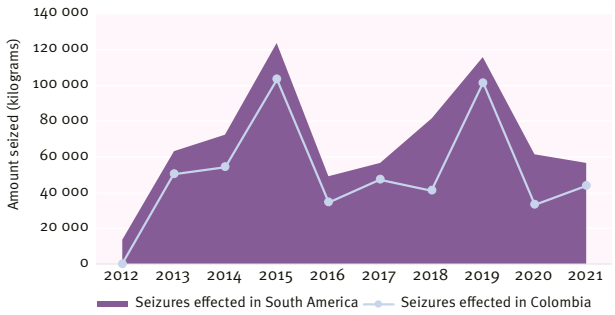
144. **Sodium hypochlorite** is another chemical associated with the illicit manufacture of potassium permanganate. Several countries, in particular in South America, have placed some kind of control over sodium hypochlorite and therefore regularly report seizures of the substance on form D. In 2021, notable seizures were reported by Argentina, in the form of a solution amounting to almost 10,000 litres, in relation to 25 incidents, and Peru (about 5 tons, up from around 3 tons in 2020 but not anywhere close to the amount of almost 14 tons seized in 2018).

145. In terms of efficiency gains, a relatively new trend that has come to the Board's attention is the use of **acetyl chloride** in the last step of the conversion of cocaine base to cocaine hydrochloride. Use of the chemical, which has long been associated with illicit heroin manufacture (see sect. C.2 below), appears to increase both the yield and purity of cocaine hydrochloride. **The Board encourages further research into the use of acetyl chloride in illicit cocaine manufacture and invites the countries concerned to also determine the sources of the chemical.**

146. **Sodium metabisulfite** is another chemical associated with efficiency gains in illicit cocaine manufacture, which are realized by using the substance to standardize the oxidation level of cocaine base sourced from multiple extraction laboratories prior to further processing. In the last 10 years, the largest seizures of sodium metabisulfite were reported by countries in South America, with Colombia accounting for almost 75 per cent of total amount seized in that region (see figure 13). In 2016, notable seizures started to be reported by countries in Europe and have been associated with an increase in cocaine laboratories, including the so-called secondary extraction, or cocaine "washing", laboratories in the region. On form D for 2021, Belgium reported seizures totalling more than 1.4 tons of sodium metabisulfite. As in previous years, the largest amounts seized in 2021 were reported by Colombia (almost 45 tons) and Peru (almost 8.5 tons). Peru also reported five seizures totalling almost 5.6 tons of **potassium metabisulfite**, a possible substitute for sodium metabisulfite.

[27] Colombian Drug Observatory (www.odc.gov.co/sidco/oferta/infraestructura-sustancias-quimicas) (in Spanish).

Figure 13. Seizures of sodium metabisulfite, as reported by Governments in South America on form D, 2012–2021



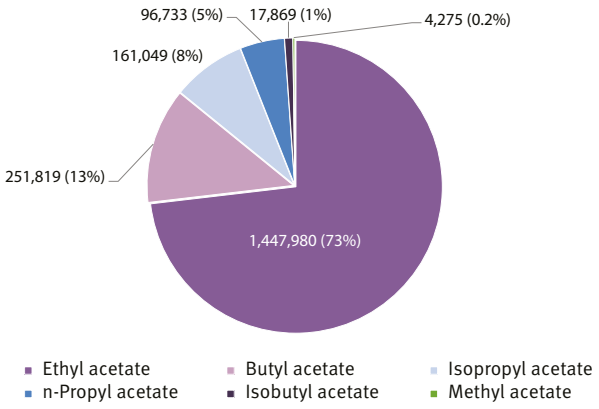
147. **Calcium chloride** is another chemical associated with efficiency gains in illicit cocaine manufacture. Specifically, it is used as a drying agent for solvents, thus enabling them to be recycled and reducing the need for fresh solvents. Whereas Bolivia (Plurinational State of) and Colombia have regularly reported significant, multi-ton seizures of calcium chloride since 2013, trafficking of the substance through Ecuador appears to have started in 2016, and peaked in 2018 at more than 143 tons.[28] Since then, quantities of calcium chloride seized in Ecuador have decreased; in 2021, they decreased to about 12 tons (in four incidents). In Peru, notable seizures of the substance have been reported since 2018, and following its placement under control in the country in January 2020, amounts totalling almost 46 tons in 2020 and 34 tons in 2021 were reported. On form D, Peru also reported first-time seizures of more than 13 tons of a substitute chemical, **magnesium chloride**, in illicit cocaine laboratories. Both chemicals were reported to be used in the recycling of acetone used in the conversion of cocaine base into hydrochloride salt.

148. In July 2022, the Government of Ecuador, with technical support from UNODC, disposed of 27 tons of calcium chloride and sodium bicarbonate by burying the chemicals in an engineered landfill near the port of Guayaquil. The Board recognizes the importance of the lawful and environmentally safe disposal of seized chemicals. Given the significant quantities of some chemicals seized, the Board also recognizes the challenges that such disposal may present and commends all Governments for their efforts in this regard. The Board welcomes technical support from UNODC and encourages other international and regional organizations to continue to provide technical support to such efforts to prevent the re-entry of seized chemicals into illicit channels and reduce the risks to the environment and neighbourhoods posed by stored chemicals.

149. While historically, acetone, ethyl ether, methyl ethyl ketone or toluene (all solvents included in Table II of the 1988 Convention) have been used for the conversion of cocaine base into hydrochloride, a variety of other common **solvents** can and are also being used. Most of them can be replaced by yet others with similar properties, and the preference for a particular solvent is often a result of its accessibility and the illicit operators' experience with it. Most solvents are obtained from domestic sources.

150. With regard to solvents required for the final conversion of cocaine base into cocaine hydrochloride, seizures of so-called **acetate solvents** (methyl, ethyl, n-propyl, isopropyl, butyl and isobutyl acetate and mixtures of them) have regularly been reported on form D. In the period 2017–2021, ethyl acetate accounted for almost 75 per cent of the total volume of acetate solvents seized worldwide (see figure 14). Seizures of **methyl acetate**, amounting to almost 4.3 tons, were reported for the first time, by Peru, in 2021.

Figure 14. Proportion of seizures of acetate solvents, expressed in kilograms and litres, as reported by Governments on form D, 2017–2021



151. On form D for 2021, 10 countries, 6 in South America, 3 in Europe and 1 in Asia, reported seizures of acetate solvents. As in previous years, the largest amounts were reported by countries in South America; seizures reported by countries in Europe may be another reflection of the cocaine "washing" laboratories that have emerged in that region. However, acetate solvents can also be used in the illicit manufacture of other synthetic drugs.

152. **Methyl isobutyl ketone** is another solvent that can be used in the final hydrochloride crystallization step in the manufacture of cocaine. Seizures of the substance, amounting to more than 23,500 litres, were only reported by Colombia in 2021.

[28] INCB report on precursors for 2021(E/INCB/2021/4), figure X and para. 160.

153. Forensic profiling analysis can provide an indication of the solvent, or solvent mixture, used in the cocaine hydrochloride crystallization step. Together with profiling methods that target the geographical origin of the coca from which the cocaine was extracted, forensic solvent analysis can thus provide valuable strategic information for law enforcement and regulatory authorities. The most recent forensic profiling results identified ethyl acetate as a prominent solvent in cocaine seized in Europe, while acetate mixtures were common in cocaine seized in the United States, and acetone was the most prominent solvent utilized in the crystallization step in the manufacture of cocaine seized in Peru. Since acetate solvents are available and widely used for a range of legitimate purposes, **the Board encourages Governments to monitor international trade in and domestic distribution of acetate solvents, as appropriate, with a view to identifying any changes in such trade or distribution, which may indicate their diversion into illicit channels. The Board's recently launched PEN Online Light system may provide a useful, voluntary tool for authorities in this regard.**

154. Some countries in South America also report the illicit manufacture of chemicals needed for cocaine processing, including ammonia, hydrochloric acid and sulphuric acid. On form D for 2021, Argentina, Honduras, Peru and Venezuela (Bolivarian Republic of) reported seizures of chemicals that can be used as precursors, including **urea**, **sulphur** and **sodium chloride**. Some of the seizures were made in illicit laboratories, indicating actual manufacture. Colombia did not report any such seizures but dismantled 15 sites used for the illicit manufacture of sulphuric acid in the period 2017–2019, according to the Colombian Drug Observatory.[29]

C. Substances used in the illicit manufacture of heroin

1. Acetic anhydride

155. Acetic anhydride is one of the most widely traded substances in Table I of the 1988 Convention, with hundreds of millions of litres of the substance traded annually. It is used in the illicit manufacture of heroin, as well as in the illicit manufacture of methamphetamine or amphetamine in instances where the immediate precursor P-2-P is illicitly derived from phenylacetic acid or phenylacetic acid derivatives (see annex VIII).

[29] Colombian Drug Observatory (www.odc.gov.co/sidco/oferta/infraestructura-sustancias-quimicas) (in Spanish).

Licit trade

156. From 1 November 2021 to 1 November 2022, the authorities of 24 exporting countries and territories used the PEN Online system to submit almost 2,300 pre-export notifications for shipments of acetic anhydride. The shipments were destined for 91 importing countries and territories and involved a total of almost 1.1 billion litres of acetic anhydride, an increase of 47 per cent compared with the previous reporting year.

157. In 2021, the competent national authorities of importing countries objected to approximately 2.8 per cent of pre-export notifications related to proposed exports of acetic anhydride, mostly for administrative reasons. The objection rate was considerably lower than it was in the period 2018–2020, when approximately 7.6 per cent of proposed shipments of acetic anhydride were objected to.

158. In 2021, authorities in the United States objected, for administrative reasons, to about 50 per cent of pre-export notifications of acetic anhydride submitted by the authorities of Mexico. That objection rate was lower than the average objection rate in the period 2018–2020 (about 75 per cent). Nevertheless, in view of the continued high proportion of objections to shipments of acetic anhydride involving the two countries, **the Board reiterates its earlier call to the Governments of Mexico and the United States, as well as other Governments with high rates of objections, to analyse and address the root causes, and to take mutually acceptable remedial measures, as deemed appropriate, to increase the efficiency of administrative control over the trade in acetic anhydride, without compromising the capacity of the countries concerned to identify and address actual diversions of the substance from either domestic or international trade.**

159. In recent years, the number of suspected or actual diversions of acetic anhydride from international trade has declined considerably, with most of the reported cases now involving diversions from domestic distribution channels prior to smuggling. During the reporting period, about 80 per cent of the total amount of acetic anhydride traded internationally was destined for a very limited number of companies (so-called "tank farms") in Belgium and the Netherlands. The ongoing domestic sale and distribution of large amounts of the substance has led traffickers to target the region for a number of years, as corroborated by continued reports of countries of the European Union being a source of the substance seized within the region and elsewhere.

160. Although none of the countries that objected through the PEN Online system to proposed shipments of acetic anhydride during the reporting period identified any shipment as being a suspected diversion attempt, some

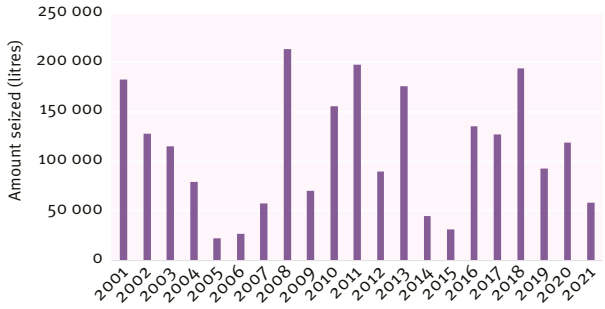
of the shipments that were objected to may have warranted follow-up law enforcement investigations into their legitimacy, in particular in cases where the proposed importer denied having ordered the shipment. To initiate such investigations, the national authorities may wish to use the dedicated INCB guide comprising practical tips for follow-up investigations into shipments of precursor chemicals that have been objected to through the PEN Online system and providing examples of best practices from a number of investigations into suspected diversion attempts. The guide was shared with Governments in 2019.[30]

Trafficking

161. Since 2001, the amount of acetic anhydride seized globally each year has fluctuated significantly, ranging from 22,000 to 214,000 litres, with a peak in the period 2016–2018, when the amount seized globally averaged 152,000 litres per year. That period was also characterized by a significant number of suspicious orders and inquiries involving legitimate suppliers. The reason for the high demand for the substance in the period 2016–2018 has never been unambiguously clarified in the countries concerned.[31]

162. In the period 2019–2020, global seizures of acetic anhydride declined to an average of 106,000 litres per year. In the same period, trafficking in acetyl chloride, a possible replacement for acetic anhydride as an acetylating agent, which emerged around 2018, gained further importance (see figure 15 and para. 171 below).

Figure 15. Seizures of acetic anhydride, as reported by Governments on form D, 2001–2021



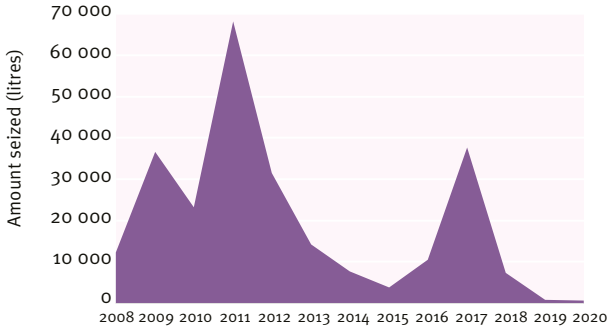
163. According to information provided by Governments on form D, the quantity of acetic anhydride seized globally declined even further in 2021, including in some countries that had previously reported seizures of sizeable amounts of the substance. In total, almost 58,600 litres of acetic anhydride were seized worldwide in 2021. In China, the total quantity seized of the substance dropped from 48,900 litres in 2020 to only 12,200 litres in 2021, representing a 75 per cent decrease. Iran (Islamic Republic of), the United Arab Emirates and Myanmar, which seized 15,000 litres, 13,300 litres and 12,200 litres of acetic anhydride, respectively, in 2020, did not report any seizures of the substance in 2021.

164. With a total amount of 36,300 litres, Türkiye reported the largest seizures of acetic anhydride in 2021, almost triple the amount reported seized in 2020 (see para. 168 below) and more than 60 per cent of the amount seized globally in 2021. Notable seizures of acetic anhydride were also reported by the Netherlands (5,600 litres) and Guatemala (4,400 litres). With regard to 2022, information communicated by Governments through PICS in the first 10 months of the year suggests a likely continued decline in the quantity of acetic anhydride seized worldwide.

165. Afghanistan remains the world's largest illicit producer of opium and heroin and is the main source of the heroin available in Europe. According to UNODC, in July 2021, opium poppy cultivation in the country was estimated at 177,000 hectares, representing 85 per cent of global illicit opium production. The opium harvest in 2021 potentially yielded between 270 and 320 tons of pure heroin, the illicit manufacture of which would potentially require between 270,000 and 800,000 litres of acetic anhydride, based on the Board's conversion figures (see annex VIII).

166. Despite the continued cultivation of opium poppy in Afghanistan, seizures of acetic anhydride in the country peaked in 2017 at 37,715 litres and have been in decline since then. In 2018, the quantity seized of the substance dropped by 80 per cent, to 7,364 litres, then to 786 litres in 2019 and further to 656 litres in 2020 (see figure 16 below).[32] In the same period, seizures of an alternative acetylation agent, namely, acetyl chloride, started to emerge in Afghanistan and other countries in West Asia.

Figure 16. Seizures of acetic anhydride, as reported by the Government of Afghanistan on form D, 2008–2020



[30] INCB report on precursors for 2019 (E/INCB/2019/4), para. 189.

[31] INCB report on precursors for 2017 (E/INCB/2017/4), paras. 167–168.

[32] At the time of writing, Afghanistan had not submitted form D and hence did not provide information on amounts of acetic anhydride and/or acetyl chloride seized in the country in 2021.

167. In April 2022, the de facto authorities of Afghanistan issued a decree banning the cultivation of opium poppy and the manufacture of illicit drugs (see also para. 14 above). Nonetheless, according to UNODC, the opium harvested in 2022 could be converted into some 240–290 tons of pure heroin, the illicit manufacture of which would potentially require between 240,000 and 725,000 litres of acetic anhydride.

168. In 2021, Türkiye reported 13 seizures of acetic anhydride amounting to a total of 36,300 litres of the substance, an increase of 24,200 litres compared with the 12,100 litres reported seized in 2020. In two particular seizures, involving a total of 25,000 litres, the seized substance had purportedly originated in European Union member States. To facilitate backtracking investigations into the seized substance, the Board convened an intelligence-sharing meeting in 2022 that was attended by representatives of the countries associated with its trafficking.

169. In the Netherlands, the total quantity seized of acetic anhydride increased more than sixfold, from 910 litres seized in 2020 to 5,610 litres seized (in two seizures) in 2021. In one case, in addition to 2,010 litres of acetic anhydride seized in a warehouse, police also seized 180 litres of glacial acetic acid, 60 kg of sodium carbonate and a large quantity of heroin. The circumstances of the case indicated the possible use of the seized chemicals in the illicit manufacture of heroin in the country. Since 2017, more than 10 sites believed to be associated with illicit heroin manufacture have been identified in the Netherlands. In recent years, illicit heroin laboratories have also been identified in other European Union member States, including Belgium, Czechia and Spain.[33,34]

[33] NCB report on precursors for 2018 (E/INCB/2018/4), para. 190.

[34] EMCDDA, *European Drug Report 2022: Trends and Developments* (Luxembourg, Publications Office of the European Union, 2022), p. 24.

2. Use of non-scheduled chemicals and other trends in the illicit manufacture of heroin

170. **Acetyl chloride** is a chemical substance known to be a possible substitute for acetic anhydride as an acetylating agent in the conversion of morphine to heroin. Acetyl chloride is therefore included in the INCB limited international special surveillance list of non-scheduled substances and is also controlled in several countries, including Afghanistan, the Islamic Republic of Iran and Pakistan.

171. In the past, seizures of acetyl chloride were only rarely reported. However, from 2017 to 2021, Afghanistan, India, Iran (Islamic Republic of), the Netherlands, Pakistan, Türkiye and the United Arab Emirates shared through PICS information on a total of 12 seizures of acetyl chloride, amounting to a total of more than 100,000 litres. Where such information was available, China was identified as the source country. In 2022, one seizure, amounting to less than 1 litre of acetyl chloride, was communicated through PICS, by Hong Kong, China.

172. Communications shared through PICS on trafficking in acetyl chloride present an opportunity for the competent national authorities of the countries concerned, including of the reported country or countries of origin, to initiate backtracking investigations with a view to identifying modi operandi used by traffickers and preventing future trafficking attempts involving the same modi operandi and/or involving the same trafficking groups. **INCB reminds the Governments concerned of the value of investigating the circumstances of seizures of key non-scheduled chemicals, such as acetyl chloride, and encourages them to consider taking action against the diversion of and trafficking in such chemicals, in accordance with article 13 of the 1988 Convention.**

173. **Glacial acetic acid** is a chemical that is included in the INCB limited international special surveillance list. It has been repeatedly reported as being used as a cover load

Box 4. Acetyl chloride and the international precursor control system

At the international level, concerns about use of acetyl chloride in illicit drug manufacture were articulated long before the adoption of the 1988 Convention, in Commission on Narcotic Drugs resolution 2 (S-V) of 1978, which focused on measures against the use of acetic anhydride or acetyl chloride in the illicit manufacture of heroin. In the resolution, reflecting the belief current at that time, the Commission recognized that there were practical considerations that made it difficult to place acetic anhydride or acetyl chloride under strict national control, particularly in countries where acetic anhydride or acetyl chloride was used in large quantities industrially. Nonetheless, acetic anhydride was eventually added to the list of internationally controlled precursor chemicals, whereas acetyl chloride is not yet internationally controlled.

or to otherwise conceal acetic anhydride. However, it may also be associated with the illicit manufacture of other drugs and precursors, including P-2-P and 3,4-MDP-2-P. In the past five years, significant seizures of the substance have been reported by countries in Latin America, where the chemical is under national control in a number of countries. On form D for 2021, the amounts of glacial acetic acid reported seized worldwide totalled 8,500 litres, including 7,600 litres of the substance seized in Peru.

174. **Ammonium chloride** is another non-scheduled chemical frequently associated with the illicit manufacture of heroin, in which it is used in the process of extracting morphine from opium. It is also required for the illicit manufacture of methylamine (see paras. 128–130 above). In 2021, only three countries reported seizures of ammonium chloride. The total amount reported seized was negligible compared with the 16,600 kg reported seized in 2020, most of which was reported by Afghanistan and Mexico.

D. Substances used in the illicit manufacture of other narcotic drugs and psychotropic substances

1. Ergot alkaloids and lysergic acid

175. On form D for 2021, three countries reported seizures of ergotamine and five reported seizures of lysergic acid; there were no seizures of ergometrine. As in the past and reflecting the potency of the end product, LSD, the amounts reported seized by each country were usually very small, in the range of a gram or less. Australia, which has regularly reported seizures of the two substances in notable quantities, seized about 360 grams of ergotamine and 240 grams of lysergic acid in 2021.

176. In July 2022, the Board became aware of an ergotamine diversion scheme in Paraguay. Investigations determined that between 2020 and 2022 at least 4.5 kg of the substance had been diverted through domestic purchases using two front companies. It is presumed that the scheme was dedicated to the diversion and that the ergotamine was sold onwards to organized criminal groups in the border area between Argentina, Brazil and Paraguay.

2. *N*-Acetylanthranilic acid, anthranilic acid and alternative precursors of methaqualone

177. On form D for 2021, China reported having stopped a shipment of anthranilic acid to Pakistan in response to a request made by the authorities in that country through the PEN Online system. While no further information about the case was available to INCB, it does not appear that it was a diversion attempt but rather a shipment stopped for administrative reasons. Although there continue to be sporadic reports of the illicit manufacture of methaqualone, the reports rarely include any information about the specific chemicals involved or their sources. There were no notable seizures of any internationally controlled precursor of methaqualone reported on form D for 2021.

178. In terms of alternative precursors of methaqualone not under international control, South Africa reported a seizure of 200 litres of ***ortho*-toluidine** at O.R. Tambo International Airport in Johannesburg, South Africa. The consignment had been mislabelled and had allegedly originated in China.

179. In addition, through PICS, INCB is aware of the seizure in 2021 of a shipment of 1.7 tons of **acetanthranil** that had arrived at the international airport in Johannesburg from Kenya. That was the fourth incident involving the substance in South Africa since 2018 and the first with a link to Kenya. The Board has inquired with the authorities concerned and is awaiting feedback on the status of follow-up investigations.

180. The seizures of acetanthranil are important because they illustrate that, as in the case of other synthetic drugs, traffickers are seeking alternative precursors not under international control also for the illicit manufacture of methaqualone. The seizures of the substance might thus explain the absence of seizures of the traditional, controlled precursors of methaqualone and also the need for a shift in the focus of law enforcement in the African region.

3. Precursors of fentanyl, fentanyl analogues and other synthetic opioids, and alternative chemicals

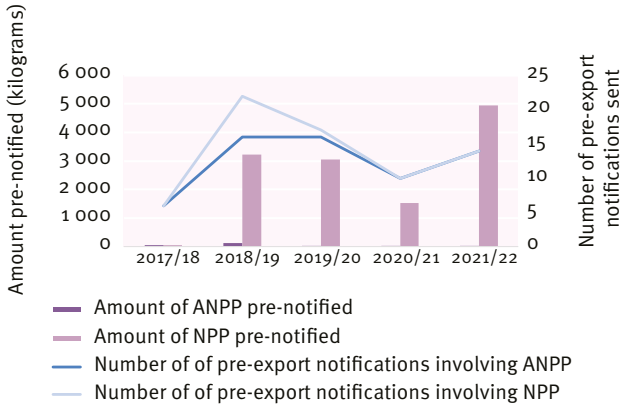
Licit trade

181. With the addition of 4-AP, 1-boc-4-AP and norfentanyl to Table I of the 1988 Convention, effective 23 November 2022, there are now five precursors of fentanyl and related substances under international control. While the extent of trade in the three chemicals remains to be seen, it is assumed that most shipments relate to trade in small amounts for limited research and laboratory analytical purposes.

182. International trade in NPP and ANPP, the other two precursors of fentanyl under international control, continued to be limited to a few exporting and importing countries. Between 1 November 2021 and 1 November 2022, 14 proposed shipments of NPP were pre-notified by the authorities of three exporting countries to five

importing countries. All of the importing countries are known to manufacture fentanyl legitimately. The total quantity involved significantly exceeded the quantities observed in the period 2019–2020 (see figure 17). The largest exporter of NPP was India, followed by France. International trade in ANPP continued to be negligible, involving less than 5 grams of the substance, in 14 proposed shipments, during the reporting period.

Figure 17. Proposed exports of two fentanyl precursors, pre-notified by exporting Governments through the PEN Online system, 2018–2021[a]



[a]Reporting periods are from 1 November of the first year to 1 November of the following year.

Trafficking

183. Incidents involving fentanyl precursors were reported on form D for the first time in 2016 (see figure 18). On form D for 2021, only Mexico and the United States reported notable seizures of **NPP** and/or **ANPP**. While the seizures in Mexico predominantly involved NPP (about 45 kg) and were alleged to have originated in China, the seizures in the United States involved 390 kg of ANPP, an amount reported to have been of domestic origin. The United States also reported 28 incidents involving fentanyl laboratories in 2021. Canada did not report any seizures of fentanyl precursors on form D, however, through PICS, the Board is aware of illicit fentanyl laboratories in the country, and of a seizure of about 12 kg of ANPP.

184. The United States was the only country to report seizures of other fentanyl precursors on form D. That included 4 kg of **1-boc-4-AP**, one of the three chemicals added to Table I of the 1988 Convention in November 2022, 180 kg of **4-piperidone** and 170 kg of **2-bromoethyl benzene**. The latter two chemicals were seized from a mislabelled shipment that had originated in China and was destined for an address in Texas, United States. The two chemicals are associated with different methods of illicit fentanyl manufacture; they also have numerous legitimate applications.

Figure 18. Seizures of fentanyl precursors (expressed in fentanyl equivalents), as reported by Governments on form D, 2016–2021

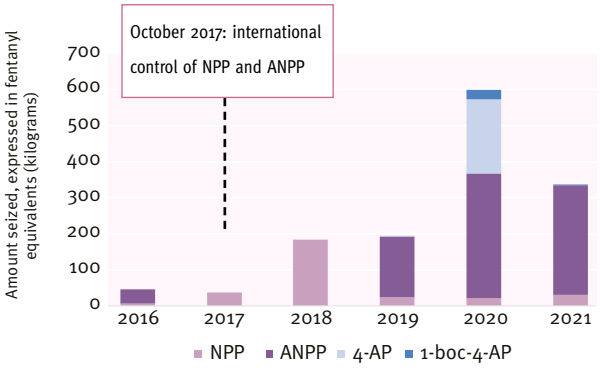
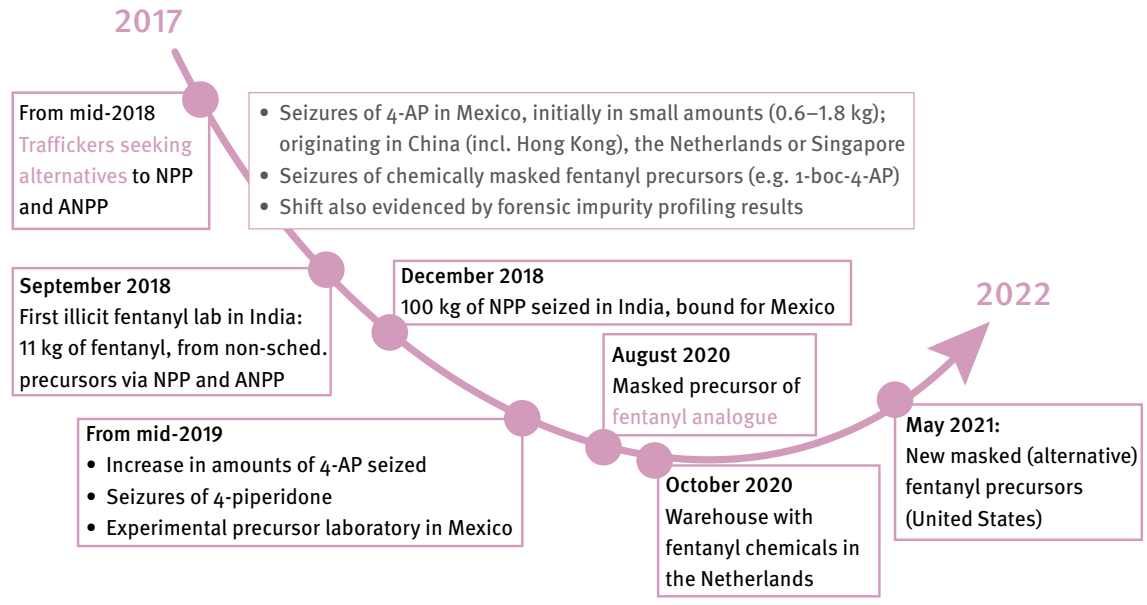


Figure 19. Schematic overview of the evolution of fentanyl precursors, 2017–2022



185. Soon after the international scheduling of NPP and ANPP, traffickers started to seek alternatives to those chemicals. The alternatives included stable chemical intermediates used in one or more of the several fentanyl manufacturing methods, as well as their chemically masked derivatives. Alternatives identified later also included pre-precursors and their masked derivatives (see figure 19). While much of the innovation with regard to these alternatives has been observed in North America, where most of the related seizures have been effected, there has also been some geographical diversification, as illustrated by incidents related to illicit fentanyl manufacture, namely, the seizure of an illicit laboratory in India in 2018 and of a warehouse containing several hundreds of litres of fentanyl chemicals in the Netherlands in 2020.

186. There were no seizures of precursors of fentanyl analogues reported on form D for 2021. However, in 2022, the United States communicated an incident involving the masked derivative of a precursor of *para*-fluorofentanyl through PICS. The misdeclared shipment was seized at the international airport in Indianapolis, United States. In that connection, the Board welcomes the scheduling approach taken by Canada (see para. 17 above) and **reiterates its call to Governments to consider taking measures, in accordance with national legislation, on groups of chemically related substances, that is, chemicals that are closely related to controlled precursors and that may be readily converted to or substituted for those precursors. Alternatively, or in addition, Governments may wish to consider taking specific measures with regard to chemicals that do not have any currently recognized legitimate uses.**

4. Precursors of phencyclidine and other phencyclidine-type drugs

187. Seizures of precursors of phencyclidine, a dissociative anaesthetic that is often misused for its hallucinogenic properties, are infrequently reported on form D. The amounts reported seized are typically very small, rarely exceeding 2 litres per country and year. The United States has been an exception, both in terms of the frequency of reported seizures and the amounts involved. While the total amount of precursors of phencyclidine seized globally has rarely exceeded 100 litres per year, in 2021, the United States reported a single seizure of more than 1,800 litres of piperidine. The shipment originated in India and was destined for a consignee in Nevada, United States; an investigation revealed that the location of the consignee was a residential apartment complex.

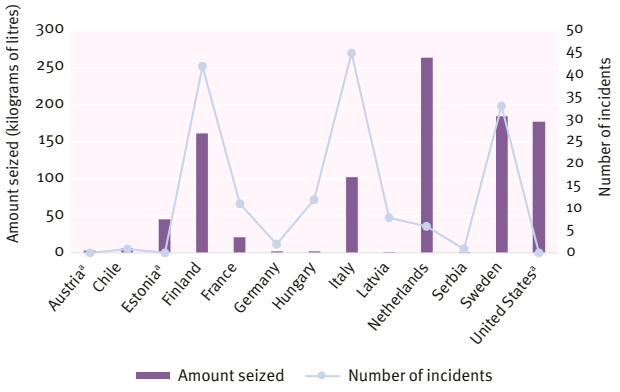
E. Substances not listed in Table I or Table II of the 1988 Convention that are used in the illicit manufacture of other narcotic drugs and psychotropic substances or substances of abuse not under international control

1. Precursors of GHB

188. On form D for 2021, 14 countries reported seizures of **GBL**, a chemical precursor of GHB that may also be directly ingested, as it is metabolized into GHB in the body. Because of this "dual use", some countries control GBL as a precursor while others control it as a psychotropic substance. As a result, not all countries where GBL is encountered report seizures of the substance on form D. In 2021, the largest quantities seized of GBL were reported by Australia, totalling more than 3 tons of the substance seized in 429 incidents. Seizures were also reported by countries in Europe and North and South America. While the majority of incidents and the largest amounts of GBL seized in Australia could be traced to countries in East and South-East Asia, the GBL seized in Europe had originated from within Europe.

189. The total amount of GBL reported seized in 2021 was significantly smaller than that reported in 2020, when the Netherlands and Slovenia reported single seizures of more than 20,000 litres and more than 12,000 litres, respectively, and several other countries reported amounts between 100 and 300 litres. By contrast, the amounts reported seized in 2021 were much smaller and reflected a larger number of incidents, and were therefore indicative of retail-level seizures of GBL for direct consumption, with the likely exception of the seizures in the Netherlands (see figure 20).

Figure 20. Seizures of GBL, as reported by Governments on form D for 2021



Note: The figure excludes Australia, which reported seizures amounting to 3,145 kg in 2021.

[a] Austria, Estonia and the United States did not provide information on the number of incidents.

190. Seizures of GBL communicated through PICS in the first 10 months of 2022 amounted to a total of about 2,900 litres, in 93 incidents. In addition, 268 incidents involving a total of about 450 litres and kilograms were communicated through IONICS during the same period, again indicating retail-level incidents.

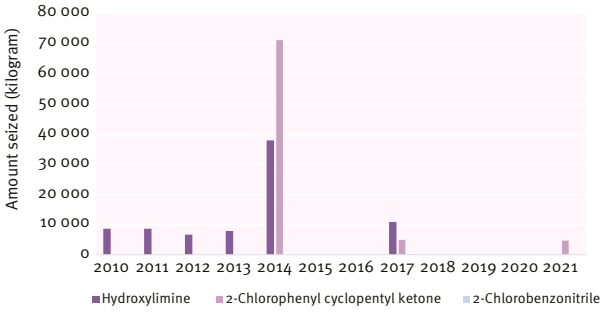
191. Seizures of **1,4-butanediol**, a precursor of GBL and a pre-precursor of GHB that is also readily converted to GHB upon ingestion, were negligible in 2021. In the past five years, only seven countries reported seizures of the substance; the largest amounts – five litres – were reported by two countries, Germany, in 2021, and Norway, in 2019. In the first 10 months of 2022, almost 170 incidents involving a total of more than 750 kilograms and litres were communicated through IONICS. Both GBL and 1,4-butanediol were target substances for Operation Knockout (see para. 41 above).

192. From other sources, INCB is aware of new methods for the illicit manufacture of GBL and/or GHB, possibly in response to controls placed on GBL in China in September 2021.[35]

2. Precursors of ketamine

193. Although there is no systematic reporting of information about precursors of ketamine and the illicit manufacture of the substance, some countries submit such data to INCB. Reported seizures of ketamine have predominantly involved two substances, **"hydroxylimine"**[36] and **2-chlorophenyl cyclopentyl ketone**. Both substances are intermediates in the synthesis of ketamine and can be readily converted into the substance; both can be considered designer precursors. On form D for 2021, China reported seizures totalling more than 4.7 tons of 2-chlorophenyl cyclopentyl ketone. No further details were provided. In the past, China has regularly reported seizures of "hydroxylimine".[37] Seizures of both substances peaked in 2014 (see figure 21). INCB is also aware of illicit ketamine laboratories having been dismantled in Cambodia, Canada, China, India, Malaysia and the Netherlands in the past 10 years; some of the laboratories, in particular those in East and South-East Asia, were of industrial scale.

Figure 21. Seizures of ketamine precursors, as reported by Governments on form D, 2010–2021



3. Precursors of new psychoactive substances, including substances recently scheduled under the Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol or the Convention on Psychotropic Substances of 1971

194. While the reporting of seizures of precursors of new psychoactive substances and substances recently placed under international control continues to be unsystematic, several countries, especially countries in Europe, report such seizures on form D. As in the past, most of the seizures made in the reporting period involved precursors of synthetic cathinones. On form D for 2021, Austria and France reported seizures of mephedrone precursors, specifically 139 kg of **2-bromo-4'-methylpropiophenone** in Austria, and 105 kg of **4-methylpropiophenone** in France. The seizure in France concerned a transit shipment from China to Ukraine. Poland reported seizures of 20 kg of **2-bromo-4'-chloropropiophenone** (a precursor of 4-CMC (clephedrone) and other 4-chloro-substituted cathinone derivatives) and more than 290 kg (in 11 incidents) of **2-bromo-4'-methoxypropiophenone** (a methedrone

[35] See INCB report on precursors for 2021 (E/INCB/2021/4), para. 28.

[36] "Hydroxylimine" is an informal term used to refer to the substance known chemically as 1-hydroxycyclopentyl (2-chlorophenyl)-ketone-*N*-methylimine.

[37] "Hydroxylimine" has been under control in China since mid-2008 and 2-chlorophenyl cyclopentyl ketone since September 2012.

precursor). In addition, the Republic of Moldova referred to a seizure of hydrochloric acid made in connection with the illicit manufacture of *alpha*-pyrrolidinopentiophenone (*alpha*-PVP).

195. In the first 10 months of 2022, seven incidents involving precursors of new psychoactive substances were communicated through PICS. They included two incidents related to illicit laboratories in the Netherlands, involving 23 kg of a mephedrone precursor and 88 kg of a clephedrone precursor. In addition, seizures in the Russian Federation involving more than 8 tons of precursors of mephedrone and *alpha*-PVP were communicated during the same period. The internationally non-scheduled chemicals had allegedly originated in China and transited Kazakhstan before being seized in the Russian Federation.

IV. Facilitation of precursor trafficking through the Internet: a thematic study

196. As the use of the Internet and other computer networks has grown rapidly in recent years, so have the opportunities for Internet-facilitated drug trafficking. This is also the case with regard to trafficking in precursor chemicals. The misuse of the Internet (the surface web) for the diversion of and trafficking in precursor chemicals was first reported by the Board in its report on precursors for 2000, in relation to fatal accidents at illicit MDMA laboratories in Europe and North America. The laboratories were operated by people with no background in chemistry who had obtained the required recipes, chemicals and equipment on the Internet.[38] In the same year, the Commission on Narcotic Drugs, in its resolution 43/8, expressed its resolve to curtail the availability of controlled pharmaceuticals and precursor chemicals for illicit purposes through the misuse of the World Wide Web.

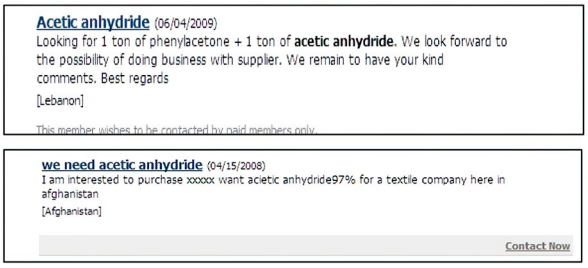
197. In 2011, the Commission, in its resolution 54/8, invited Member States to take appropriate measures to strengthen international cooperation and the exchange of information regarding the identification of new routes and modi operandi of criminal organizations dedicated to the diversion or smuggling of precursor chemicals frequently used in the illicit manufacture of narcotic drugs and psychotropic substances, including with respect to the use of the Internet for illicit purposes, and to continue to notify INCB of such information.

198. In 2017, in its resolution 60/5, the Commission encouraged Member States, INCB and UNODC to collect data, analyse evidence and share information with respect to criminal activities conducted via the Internet relating to precursors, and to continue to strengthen legal, law enforcement and criminal justice responses, based on national legislation, as well as international cooperation, to curb such illicit activities.

Drivers of precursor trafficking over the Internet

199. Past monitoring of the Internet by the Board's secretariat indicated that, from the early 2000s to the early 2010s, Internet-facilitated precursor trafficking appeared to be primarily driven by potential buyers of precursors seeking chemicals needed in illicit drug laboratories (see figure 22). At that time, such buyers did not make much effort to hide their identity or activities. Their contact details, and even those of vendors, were relatively easy to identify. Despite information being available that enabled the identification of those involved, regulatory and law enforcement authorities often did not make use of that information for follow-up inquiries or investigations, perhaps owing to a lack of awareness and expertise.

Figure 22. Examples of Internet postings advertising the intent to purchase precursors in the period 2008–2009



200. Since the late 2010s, the situation has changed, with Internet posts related to precursors being dominated by vendors or private sellers, as compared with the earlier attempts, which were dominated by buyers. The advertisements have also become more sophisticated compared with the relatively transparent methods noted earlier, with the latest postings by vendors increasingly using Chemical Abstracts Service (CAS) registry numbers in addition to, or instead of, chemical names and/or street names of controlled precursors and non-scheduled chemicals. In addition, vendors have also resorted to the use of anonymizing

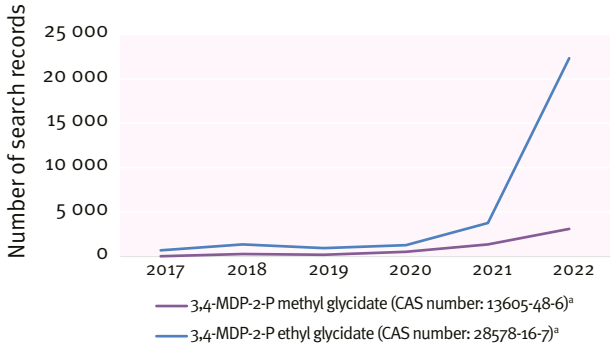
[38] INCB report on precursors for 2000 (E/INCB/2000/4), para. 76.

technologies such as virtual private network and proxy services[39] to hide Internet protocol addresses and locations. Furthermore, while the initial contact between potential buyers and vendors of precursors and non-scheduled chemicals continues to be made on legitimate online platforms, including business-to-business and social media platforms, subsequent communications are often carried out by means of encrypted systems that remain beyond the reach of law enforcement authorities.[40]

201. Regardless of whether it is driven by buyers or sellers, Internet-facilitated trafficking in precursors is always influenced by the regulatory environment, at both the international and national levels. Information derived from the monitoring of Internet activity may indicate either the continued or discontinued interest of traffickers in chemicals after their scheduling.

202. The following figures provide an illustration of changed patterns in relation to traffickers' interest in two precursors of MDMA and related substances: 3,4-MDP-2-P methyl glycidate ("PMK glycidate"), which was placed in Table I of the 1988 Convention in November 2019, and 3,4-MDP-2-P ethyl glycidate ("PMK ethyl glycidate"), its internationally non-scheduled substitute. Prior to the international scheduling of 3,4-MDP-2-P methyl glycidate in 2019, the number of Internet search records for both substances was relatively stable, however, once the scheduling was effected, searches for the non-scheduled 3,4-MDP-2-P ethyl glycidate grew at a much faster rate than those for the internationally controlled 3,4-MDP-2-P methyl glycidate. The number of search records for 3,4-MDP-2-P ethyl glycidate increased even further after China introduced national controls over 3,4-MDP-2-P methyl glycidate in the second half of 2021 (see figure 23).

Figure 23. Number of Internet search records for 3,4-MDP-2-P methyl glycidate and 3,4-MDP-2-P ethyl glycidate per year since 2017



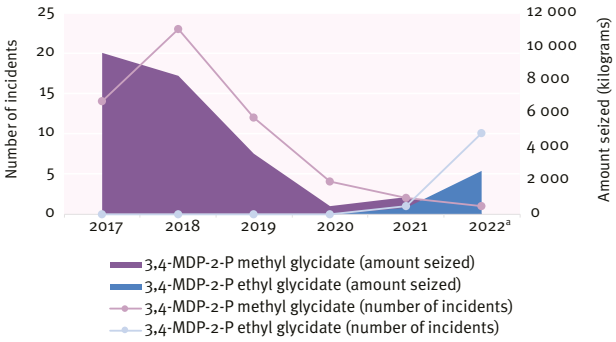
[a]Searches were done on the basis of CAS numbers.

[39]Europol, *The Internet Organized Crime Threat Assessment 2014* (The Hague, 2014), p. 21.

[40]Such as Telegram or Wickr.

203. As regards seizure, the Board has previously noted a phenomenon whereby incidents involving a particular chemical decline significantly following its international scheduling.[41] Figure 24 illustrates this with regard to the number of incidents and amounts of 3,4-MDP-2-P methyl glycidate. Seizures of the substance have continued to decline following its scheduling in China in 2021.[42] In contrast to the decline in seizures of 3,4-MDP-2-P methyl glycidate, seizures of 3,4-MDP-2-P ethyl glycidate emerged in 2021 and increased significantly in 2022, both in terms of the number of incidents and the amounts involved (see figure 24). This trend corresponds to the large number of Internet search records for the substance in that period. It is worth mentioning that neither 3,4-MDP-2-P methyl glycidate nor 3,4-MDP-2-P ethyl glycidate have any known legitimate use.

Figure 24. Incidents involving 3,4-MDP-2-P methyl glycidate and 3,4-MDP-2-P ethyl glycidate communicated through PICS, 2017–2022



[a]The data only cover the first 10 months of 2022.

Addressing Internet-facilitated trafficking in precursors

204. Although the awareness of Internet-facilitated trafficking in precursors has increased among competent national authorities, the actual magnitude of the problem, in particular in terms of the number of suspicious websites and listings on e-commerce and social media platforms advertising the sale of precursor chemicals, including those with no legitimate use, has also further increased.[43] Nonetheless, the number of regulatory and/or law enforcement investigations launched by competent national

[41]INCB report on precursors for 2021 (E/INCB/2021/4), para. 30 and figure I.

[42]Of the 57 cases involving the substances shared through PICS in the period from 1 January 2017 to 15 September 2022, China, including Hong Kong, was mentioned as the country of origin in 35 out of the 37 cases in which the country of origin was indicated.

[43]Observations from Internet monitoring also indicate likely links between multiple suspicious postings regarding precursors and non-scheduled chemicals found on the surface web that contained the same contact details, suggesting that they had been posted by the same trafficker or traffickers.

authorities worldwide in order to verify the legitimacy of suspicious postings has remained very low. That is perhaps attributable to the fact that many law enforcement officials may believe that suspicious postings on online trading platforms or suspicious websites are online scams rather than advertisements by legitimate vendors with the capacity to supply the advertised precursor chemicals (see also para. 207 below).

205. While limited, investigations into Internet-facilitated precursor trafficking conducted since 2017 have produced significant results, such as a seizure of nearly 10 tons of acetic anhydride in India in 2018, the largest seizure of the substance in the country in the last two decades, and a seizure of ephedrine and ketamine in India in 2022. Follow-up investigations into the latter case led to the identification of a shipment of methamphetamine destined for Australia. The case also involved the use of cryptocurrencies for payment and led to the arrest of the persons involved. A common feature in both cases was the cooperation between the authorities and the private business-to-business Internet platforms on which the suspicious postings were placed, which ultimately led to the seizures and arrests. In another case, backtracking investigations into seizures of acetic anhydride in Pakistan were supported by several other countries, including in the form of cybercrime investigations in India, which resulted in the arrest of an individual who had been involved in the trafficking of large amounts of the substance to Pakistan through the United Republic of Tanzania in 2016.[44,45]

206. These examples prove that investigations into Internet-facilitated precursor trafficking contribute to the disruption of trafficking networks. Similar investigations would also be required in other countries, in particular in countries identified as main sources and end users of the drug precursors.

207. In 2021, the targeted, time-bound Operation Acronym, which focused on precursor trafficking over the Internet (the surface web), further assisted the Board in identifying practical obstacles and legal challenges to investigations related to precursors and cybercrime that may have prevented the competent national authorities from launching investigations into suspicious online postings. The obstacles and challenges identified included the following:

(a) Lack of national regulations concerning the offering for sale or distribution, or the mediating in the sale or purchase, of precursors through a website or social media;

(b) Hesitation to initiate investigations into suspicious postings because they might represent scams rather than legitimate trade in precursors;

(c) Lack of sufficient proof of the buyer's or vendor's knowledge that a precursor proposed to be sold or bought online was intended to be used for the illicit manufacture of drugs, leading to a perceived lack of legal grounds to support the initiation of criminal investigations.

208. In most countries, national precursor control measures require the registration of precursor operators (i.e. manufacturers, importers, exporters, distributors or end users) with the competent national authorities, as well as a general or individual authorization for the import and export of controlled substances. The mandatory reporting of domestic trade and distribution is also required in some jurisdictions. As such measures are in place in a number of countries, the Board believes that the administrative verification of the postings and the authenticity of the information contained in them, at least in respect of substances under national control, should not present a major challenge for competent national authorities. Furthermore, the Board recommends that relevant Government agencies engage with the operators of legitimate online platforms to obtain additional information that could assist in identifying persons or companies behind suspicious postings. Operators of legitimate online platforms have repeatedly confirmed their readiness to voluntarily provide such information, upon request.

209. Where information from the concerned Internet platforms about suspected illicit activities involving precursors is difficult to obtain on a voluntary basis, specific regulations covering precursor-related Internet postings may strengthen the powers of competent national authorities to obtain such information. Some Governments that already had successful voluntary cooperation arrangements with business-to-business platforms nevertheless put in place specific regulations to include activities involving the offering for sale or distribution, or the mediating in the sale or purchase, of controlled precursors through a website or social media, or in any other manner. In addition, such specific regulations require online trading platforms that facilitate trade in precursor chemicals to provide the details of transactions involving selected precursors.[46]

[44] Faraz Khan, "CTD arrests two TTP suspects for 'terror financing'", The News International, 29 January 2021.

[45] INCB report on precursors for 2021 (E/INCB/2021/4), para. 172.

[46] INCB report on precursors for 2020 (E/INCB/2020/4), box 2.

Box 5. Approaches to addressing suspicious Internet postings

In view of the large number of suspicious Internet postings, some experts advocate for the removal of such postings from the platforms concerned, as well as the provision of relevant information on suspicious vendors and buyers to law enforcement authorities.[a] While the removal of listings of chemical precursors by private companies, deprioritization[b] or the entire removal of precursors and non-scheduled chemicals from the search indices may be seen to produce measurable results, limited practical experience from targeted operational activities supported by INCB indicates that if the removal of suspicious listings is not supported by follow-up investigations to identify prospective buyers or sellers of the chemicals, such an approach may end up addressing only the symptoms but not the root cause of the problem. Instances are known where the removal of suspicious postings by cooperative Internet platforms was followed by the appearance of the same postings on other platforms that did not have established voluntary cooperation arrangements with the respective competent national authorities. Therefore, some experts advocate for the adoption of other legal and practical measures, such as the setting up of "spoof"[c] online advertisements for precursors or non-scheduled chemicals on business-to-business websites or social media or other platforms, or the use of undercover operations, including sting operations, to gather information on prospective buyers or sellers of related chemicals.[d]

Criminal investigations, including investigations into Internet-facilitated precursor trafficking, often involve cross-border investigations and the gathering of electronic evidence. According to Europol, electronic evidence in any form is relevant in approximately 85 per cent of all criminal investigations, and in almost two thirds of the investigations in which electronic evidence is relevant, a request to service providers based in another jurisdiction is needed. Europol experts on cybercrime investigation therefore advocate for the removal of certain legal obstacles faced by investigators, including barriers to the retention and sharing of data by Internet service providers, clearer rules for registering Internet protocol addresses and domains, a stronger focus on undercover activities, and increased efficiency and cross-border cooperation in investigations, including electronic data exchange.[e]

Some Governments have put in place specific legislation or regulations that cover Internet postings relating to precursors. During Operation Acronym, India, Thailand, the United Arab Emirates and the United States were among the countries that informed INCB that Internet-facilitated trade in at least one of the seven internationally controlled target substances was subject to national control. In addition, the Board is aware of specific regulations applied in some countries, such as China, where all entities that sell precursors over the Internet are required to be registered with the competent national authorities.[f] Some, but not all, European Union member States participating in Operation Acronym confirmed that trade in target substances through the Internet was subject to national control. The variety in the responses by European Union member States indicates the different ways in which the term "Internet-facilitated trade" in precursors is interpreted. Some countries evidently believe that regulation of precursors covers Internet activities only when they result in actual trade and not when they remain limited to intermediary activities carried out through the Internet, such as the advertising for the sale or purchase of precursors through business-to-business and social media platforms and websites.

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[a] United States Commission on Combating Synthetic Opioid Trafficking, *Final Report* (February 2022), p. 44. Available at www.rand.org/pubs/external_publications/EP68838.html.

[b] Defined as the forced placement of relevant pages at the bottom of search result rankings.

[c] "Spoofing" refers to a type of scam in which a criminal disguises an email address, display name, phone number, text message or website address to convince a target that he or she is interacting with a known, trusted source.

[d] United States Commission on Combating Synthetic Opioid Trafficking, *Final Report*, p. 43.

[e] Europol, *Internet Organized Crime Threat Assessment 2021*, p. 39.

[f] INCB report on precursors for 2017 (E/INCB/2017/4), para. 232.

Way forward

210. As the Internet continues to be targeted in various ways as a medium for facilitating precursor trafficking, there is a need for Governments to prioritize this issue and put in place a comprehensive solution that would cover the entire spectrum, from voluntary cooperation measures with relevant Internet industries, to the monitoring of and investigations into suspicious postings, and to specific legislative measures to support law enforcement efforts. **The Board, accordingly, encourages Governments to effectively implement the recommendations contained in Commission on Narcotic Drugs resolution 54/8 and to adopt a balanced approach to preventing the Internet-facilitated diversion and smuggling of precursor chemicals. Furthermore, the Board recommends that, in doing so, authorities introduce law enforcement actions to identify and prosecute the traffickers responsible for such activities in order to disrupt their activities. Where this is not possible, as a minimum, and in accordance with national circumstances and regulations, authorities may consider engaging with the operators of the Internet platforms concerned to encourage the removal of suspicious postings. The Board stands ready to continue providing all necessary support to those ends**.

V. Conclusions and recommendations

211. The present chapter summarizes the key conclusions of this report and provides recommendations to Governments, with a view to preventing trafficking in precursors and strengthening the functioning of the precursor control system at the national, regional and international levels. Specific recommendations and conclusions are also incorporated in the other chapters of the report, presented in bold text.

212. In the reporting period, many of the Board's earlier observations were confirmed, such as the continued emergence of non-scheduled alternative chemicals for use in the illicit manufacture of an ever-wider range of drugs. There was also a re-emergence of trends that had disappeared for some time, such as the diversion of pharmaceutical preparations containing ephedrines, in particular pseudoephedrine.

213. The resurgence of diversions of pharmaceutical preparations containing controlled precursors may explain some of the illicit drug manufacturing trends. However, gaps in data continue to exist, in both quantitative and qualitative terms, as the amounts of precursors seized continue to be significantly lower than the amounts of the end-product equivalents seized, especially in relation to methamphetamine and its precursors. The data for 2021 may indicate the existence of manufacturing sites in as yet unaffected countries and regions. Notable data gaps are also found in relation to the flows of precursors of amphetamine and the illicit manufacture of the substance, as the key ingredient of fake "captagon" pills that are seized in massive amounts, especially in countries in West Asia.

214. In that connection, INCB continues to be concerned about flows of precursors in countries affected by conflict, unresolved territorial disputes, weak rule of law or other circumstances that hinder the exercise of effective control. The countries concerned, as well as international trading partners, need to more carefully scrutinize the potential modus operandi of criminal networks to determine how traffickers are obtaining chemicals and moving them to the sites of illicit manufacture. Given the lack of capacity as one possible reason for the limited knowledge in this area, **the Board encourages Governments, international donors and organizations and other relevant partners that engage in technical cooperation programmes to work together to build capacities and operational knowledge to prevent chemicals from being diverted into illicit drug manufacture.**

215. A significant share of the chemicals seized globally continues to comprise chemicals diverted from domestic distribution channels, including common markets. As regulating the domestic market and monitoring domestic sales and distribution pursuant to article 12, paragraph 8, of the 1988 Convention is the exclusive prerogative of Governments, knowledge of industry landscapes at the national level is a critical first step in protecting these licit markets and their operators from traffickers. To aid Governments in acquiring or enhancing such knowledge, INCB has prepared and disseminated an additional guidance document on categories of relevant industries, which is also available on the Board's secure website. **The Board encourages Governments to establish whether the different categories of industries that might be involved in the manufacture, trade or distribution of chemicals used for illicit drug manufacture are present in their country, as well as their sizes and geographical spread. Such an exercise would allow Governments to approach and eventually engage industries in self-protective, proactive strategies aimed at both reducing opportunities for infiltration by traffickers and facilitating the monitoring of the potential evolution of illicit drug markets.**

216. Given the number of cases described in this report that involved precursors under international control and that came to light through the use of the PEN Online system and the system of estimated annual legitimate requirements, the importance of these tools in preventing the diversion of precursors from legitimate international trade has once again been proved. However, INCB notes that there continues to be a gap between the regulatory action of stopping a proposed shipment from proceeding and the necessary law enforcement investigations into the background of the consignment, including how and by whom it was ordered and the details of the shipping documents and the consignee, to identify traffickers and prevent them from targeting companies using similar modi operandi elsewhere. **The Board therefore encourages the regulatory and law enforcement authorities concerned to improve their cooperation at the national level and with their international counterparts. The Board also encourages them to treat stopped shipments as the starting point of investigations to identify traffickers and new modi operandi, including backtracking investigations.**

217. With regard to substances not included in Table I or Table II of the 1988 Convention, INCB welcomes Commission on Narcotic Drugs resolution 65/3, in particular the recommendation to Governments, when placing domestic controls on a substance pursuant to a decision by the Commission to add that substance to Table I or Table II, to consider also taking domestic measures on related chemicals that may readily be converted to or substituted for that substance, in accordance with national legislation. **The Board encourages Governments to implement that recommendation in order to prevent more proactively the exploitation by traffickers of groups of substances that are chemically related to controlled precursors, including derivatives and analogues of such precursors.**

218. A modus operandi that the Board has observed and to which it has alerted Governments for some time is the use of the Internet, including websites and business-to-business and social media platforms, to advertise for the sale or purchase of precursor chemicals, regardless of whether or not they are internationally controlled. Chapter IV of this report examined the subject of Internet-facilitated precursor trafficking and highlighted the need for Governments to give due attention to precursor-related postings on such platforms. **In that connection, the Board encourages Governments to monitor the Internet (the surface web) for suspicious postings regarding precursors and to investigate them with a view to identifying the traffickers involved and disrupting their activities. Voluntary cooperation with such Internet platforms can also be gainfully utilized to ensure the removal of such postings, in cases where investigation is not possible.**

219. Only 45 per cent of Governments submitted their annual precursor statistics on form D for 2021 on time, that is, by 30 June 2022, continuing a pattern that has been observed for several years. Once all forms that had been received as at 1 November 2022 were considered, the percentage of Governments that submitted form D increased to 66 per cent. While the timeliness and number of submissions are basic indicators of compliance, the quality of submissions is what enables the Board, and the countries concerned, to identify the strengths and weaknesses of national, regional and international precursor control systems. **The Board would therefore like to reiterate the critical importance of the quality, comprehensiveness and timeliness of data on precursors for meaningful analyses, the identification of new developments and action to prevent the diversion of chemicals and their use in illicit laboratories**.

220. Finally, the Board would also like to reiterate that, in addition to chemicals, equipment is also essential for illicit drug manufacture. The Board has therefore expanded its work in relation to such equipment, with a view to enhancing the implementation of article 13 of the 1988 Convention. A first technical report on essential equipment was launched in October 2022 and is available on the Board's website. **INCB stands ready to fully support Governments in their efforts to implement articles 12 and 13 of the 1988 Convention, with regard to precursors under international control, chemicals not included in the tables of the Convention, and illicit drug manufacturing equipment.**

Glossary

In the present report, the following terms and definitions have been used:

chemical intermediate	A chemical generated during a multi-step synthesis process that is normally not isolated but immediately consumed in the next synthesis step. Stable chemical intermediates can be isolated and have been encountered as purpose-made substitute chemicals for controlled precursors
designer precursor	A close chemical relative of a controlled precursor that is purpose-made to circumvent controls and usually does not have any recognized legitimate use
diversion	The transfer of substances from licit to illicit channels
forensic profiling analysis	In-depth laboratory analysis to trace any by-products generated during illicit manufacture, with a view to, inter alia, identifying the precursors used in such manufacture
immediate precursor	A precursor that is generally only one reaction step away from the end product
industrial-scale laboratory	A laboratory for the manufacture of synthetic drugs in which oversized equipment and/or glassware that is either custom-made or purchased from industrial processing sources and/or that uses serial reactions is used and in which significant amounts of drugs are produced in very short periods of time, the amount being limited only by the need for access to precursors and other essential chemicals in adequate quantities and for the logistics and workers to handle large amounts of drugs and chemicals
limited international special surveillance list of non-scheduled substances	A list prepared, pursuant to Economic and Social Council resolution 1996/29, and regularly updated by INCB that includes substitute and alternative chemicals, as well as groups of common derivatives and other related substances that can be converted into one of the scheduled precursors by readily applicable means, and for which substantial information exists on their use in illicit drug manufacture
pharmaceutical preparation	A preparation for therapeutic (human or veterinary) use in its finished dosage form that contains precursors present in such a way that they can be used or recovered by readily applicable means; such preparations may be presented in their retail packaging or in bulk
precursor	In general, a starting material used to manufacture a narcotic drug, psychotropic substance or another precursor; sometimes used to refer exclusively to the substances in Table I and Table II of the 1988 Convention
pre-precursor	A precursor of a precursor
seizure	An act of prohibiting the transfer, conversion, disposition or movement of property or assuming custody of or control over property on the basis of an order issued by a court or competent authority; it may be temporary or permanent (i.e. confiscation); different national legal systems may use different terms
stopped shipment	A shipment permanently withheld, either because reasonable grounds exist to believe that it may constitute an attempted diversion, or as a result of administrative problems or because of other grounds for concern or suspicion
suspicious order (or suspicious transaction)	An order (or transaction) of questionable, dishonest or unusual character or condition, for which there is reason to believe that a chemical that is being ordered, imported or exported or is transiting a country or territory is destined for the illicit manufacture of narcotic drugs or psychotropic substances

Annex I

Parties and non-parties to the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988, by region, as at 1 November 2022

Note: The date on which the instrument of ratification or accession was deposited is indicated in parentheses.

Region	*Party to the 1988 Convention*		*Non-party to the 1988 Convention*
AFRICA	Algeria (9 May 1995)	Eritrea (30 January 2002)	Equatorial Guinea
	Angola (26 October 2005)	Eswatini (8 October 1995)	Somalia
	Benin (23 May 1997)	Ethiopia (11 October 1994)	South Sudan
	Botswana (13 August 1996)	Gabon (10 July 2006)	
	Burkina Faso (2 June 1992)	Gambia (23 April 1996)	
	Burundi (18 February 1993)	Ghana (10 April 1990)	
	Cabo Verde (8 May 1995)	Guinea (27 December 1990)	
	Cameroon (28 October 1991)	Guinea-Bissau (27 October 1995)	
	Central African Republic (15 October 2001)	Kenya (19 October 1992)	
	Chad (9 June 1995)	Lesotho (28 March 1995)	
	Comoros (1 March 2000)	Liberia (16 September 2005)	
	Congo (3 March 2004)	Libya (22 July 1996)	
	Côte d'Ivoire (25 November 1991)	Madagascar (12 March 1991)	
	Democratic Republic of the Congo (28 October 2005)	Malawi (12 October 1995)	
	Djibouti (22 February 2001)	Mali (31 October 1995)	
	Egypt (15 March 1991)	Mauritania (1 July 1993)	

Region	*Party to the 1988 Convention*		*Non-party to the 1988 Convention*
	Mauritius (6 March 2001)	Sierra Leone (6 June 1994)	
	Morocco (28 October 1992)	South Africa (14 December 1998)	
	Mozambique (8 June 1998)	Sudan (19 November 1993)	
	Namibia (6 March 2009)	Togo (1 August 1990)	
	Niger (10 November 1992)	Tunisia (20 September 1990)	
	Nigeria (1 November 1989)	Uganda (20 August 1990)	
	Rwanda (13 May 2002)	United Republic of Tanzania (17 April 1996)	
	Sao Tome and Principe (20 June 1996)	Zambia (28 May 1993)	
	Senegal (27 November 1989)	Zimbabwe (30 July 1993)	
	Seychelles (27 February 1992)		
Regional total 54	**51**		**3**
AMERICAS	Antigua and Barbuda (5 April 1993)	Dominica (30 June 1993)	
	Argentina (10 June 1993)	Dominican Republic (21 September 1993)	
	Bahamas (30 January 1989)	Ecuador (23 March 1990)	
	Barbados (15 October 1992)	El Salvador (21 May 1993)	
	Belize (24 July 1996)	Grenada (10 December 1990)	
	Bolivia (Plurinational State of) (20 August 1990)	Guatemala (28 February 1991)	
	Brazil (17 July 1991)	Guyana (19 March 1993)	
	Canada (5 July 1990)	Haiti (18 September 1995)	
	Chile (13 March 1990)	Honduras (11 December 1991)	
	Colombia (10 June 1994)	Jamaica (29 December 1995)	
	Costa Rica (8 February 1991)	Mexico (11 April 1990)	
	Cuba (12 June 1996)	Nicaragua (4 May 1990)	

Region	*Party to the 1988 Convention*		*Non-party to the 1988 Convention*
	Panama (13 January 1994)	Suriname (28 October 1992)	
	Paraguay (23 August 1990)	Trinidad and Tobago (17 February 1995)	
	Peru (16 January 1992)	United States of America (20 February 1990)	
	Saint Kitts and Nevis (19 April 1995)	Uruguay (10 March 1995)	
	Saint Lucia (21 August 1995)	Venezuela (Bolivarian Republic of) (16 July 1991)	
	Saint Vincent and the Grenadines (17 May 1994)		
Regional total 35	**35**		**0**
ASIA	Afghanistan (14 February 1992)	Japan (12 June 1992)	
	Armenia (13 September 1993)	Jordan (16 April 1990)	
	Azerbaijan (22 September 1993)	Kazakhstan (29 April 1997)	
	Bahrain (7 February 1990)	Kuwait (3 November 2000)	
	Bangladesh (11 October 1990)	Kyrgyzstan (7 October 1994)	
	Bhutan (27 August 1990)	Lao People's Democratic Republic (1 October 2004)	
	Brunei Darussalam (12 November 1993)	Lebanon (11 March 1996)	
	Cambodia (2 April 2005)	Malaysia (11 May 1993)	
	China (25 October 1989)	Maldives (7 September 2000)	
	Democratic People's Republic of Korea (19 March 2007)	Mongolia (25 June 2003)	
	Georgia (8 January 1998)	Myanmar (11 June 1991)	
	India (27 March 1990)	Nepal (24 July 1991)	
	Indonesia (23 February 1999)	Oman (15 March 1991)	
	Iran (Islamic Republic of) (7 December 1992)	Pakistan (25 October 1991)	
	Iraq (22 July 1998)	Philippines (7 June 1996)	
	Israel (20 March 2002)	Qatar (4 May 1990)	

Region	*Party to the 1988 Convention*		*Non-party to the 1988 Convention*
	Republic of Korea (28 December 1998)	Timor-Leste (3 June 2014)	
	Saudi Arabia (9 January 1992)	Türkiye[a] (2 April 1996)	
	Singapore (23 October 1997)	Turkmenistan (21 February 1996)	
	Sri Lanka (6 June 1991)	United Arab Emirates (12 April 1990)	
	State of Palestine (29 December 2017)	Uzbekistan (24 August 1995)	
	Syrian Arab Republic (3 September 1991)	Viet Nam (4 November 1997)	
	Tajikistan (6 May 1996)	Yemen (25 March 1996)	
	Thailand (3 May 2002)		
Regional total 47	**47**		**0**
EUROPE	Albania (27 July 2001)	France[b] (31 December 1990)	
	Andorra (23 July 1999)	Germany[b] (30 November 1993)	
	Austria[b] (11 July 1997)	Greece[b] (28 January 1992)	
	Belarus (15 October 1990)	Holy See (25 January 2012)	
	Belgium[b] (25 October 1995)	Hungary[b] (15 November 1996)	
	Bosnia and Herzegovina (1 September 1993)	Iceland (2 September 1997)	
	Bulgaria[b] (24 September 1992)	Ireland[b] (3 September 1996)	
	Croatia[b] (26 July 1993)	Italy[b] (31 December 1990)	
	Cyprus[b] (25 May 1990)	Latvia[b] (25 February 1994)	
	Czechia[b] (30 December 1993)	Liechtenstein (9 March 2007)	
	Denmark[b] (19 December 1991)	Lithuania[b] (8 June 1998)	
	Estonia[b] (12 July 2000)	Luxembourg[b] (29 April 1992)	
	Finland[b] (15 February 1994)	Malta[b] (28 February 1996)	

Region	*Party to the 1988 Convention*		*Non-party to the 1988 Convention*
	Monaco (23 April 1991)	San Marino (10 October 2000)	
	Montenegro (3 June 2006)	Serbia (3 January 1991)	
	Netherlands[b] (8 September 1993)	Slovakia[b] (28 May 1993)	
	North Macedonia (13 October 1993)	Slovenia[b] (6 July 1992)	
	Norway (14 November 1994)	Spain[b] (13 August 1990)	
	Poland[b] (26 May 1994)	Sweden[b] (22 July 1991)	
	Portugal[b] (3 December 1991)	Switzerland (14 September 2005)	
	Republic of Moldova (15 February 1995)	United Kingdom of Great Britain and Northern Ireland[c] (28 June 1991)	
	Romania[b] (21 January 1993)	Ukraine (28 August 1991)	
	Russian Federation (17 December 1990)	European Union[d] (31 December 1990)	
Regional total 46	**46**		**0**
OCEANIA	Australia (16 November 1992)	New Zealand (16 December 1998)	Kiribati
	Cook Islands (22 February 2005)	Niue (16 July 2012)	Papua New Guinea
	Fiji (25 March 1993)	Palau (14 August 2019)	Solomon Islands
	Marshall Islands (5 November 2010)	Samoa (19 August 2005)	Tuvalu
	Micronesia (Federated States of) (6 July 2004)	Tonga (29 April 1996)	
	Nauru (12 July 2012)	Vanuatu (26 January 2006)	
Regional total 16	**12**		**4**
World total 198	**191**		**7**

[a] Since 31 May 2022, "Türkiye" has replaced "Turkey" as the short name used in the United Nations.
[b] State member of the European Union.
[c] The United Kingdom ceased to be a member of the European Union on 31 January 2020.
[d] Extent of competence: article 12.

Annex II

Submission of information by Governments, pursuant to article 12 of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988, on form D for the years 2017–2021

Notes: The names of non-metropolitan territories and special administrative regions are in italics.
A blank signifies that form D was not received.
"X" signifies that a completed form D (or equivalent report) was submitted (including forms in which all fields contained "nil", "0", "none", etc.).
Entries for parties to the 1988 Convention (and for the years that they have been parties) are shaded.

Country or territory	*2017*	*2018*	*2019*	*2020*	*2021*
Afghanistan	X	X	X	X	
Albania	X	X	X		X
Algeria	X	X	X		
Andorra	X		X	X	X
Angola	X	X	X		
Anguilla[a]					
Antigua and Barbuda					
Argentina	X	X	X	X	X
Armenia	X	X	X	X	X
Aruba[a]					
Ascension					
Australia	X		X	X	X
Austria[b]	X	X	X	X	X
Azerbaijan	X	X	X	X	X
Bahamas					
Bahrain	X	X	X	X	X
Bangladesh	X				
Barbados					
Belarus	X	X	X		X
Belgium[b]	X	X	X	X	X
Belize	X				
Benin	X	X			X
Bermuda[a]					
Bhutan	X	X	X	X	X
Bolivia (Plurinational State of)	X	X	X	X	X
Bosnia and Herzegovina	X	X	X	X	X
Botswana	X		X	X	X
Brazil	X	X	X	X	
British Virgin Islands[a]					

Country or territory	*2017*	*2018*	*2019*	*2020*	*2021*
Brunei Darussalam	X	X	X	X	X
Bulgaria[b]	X	X	X	X	X
Burkina Faso					
Burundi			X		
Cabo Verde	X	X			
Cambodia					
Cameroon			X	X	X
Canada	X	X	X	X	X
Cayman Islands[a]					
Central African Republic					
Chad			X		
Chile	X	X	X	X	X
China		X	X	X	X
China, Hong Kong SAR		X	X	X	
China, Macao SAR		X			
Christmas Island[a,c]					
Cocos (Keeling) Islands[a,c]					
Colombia	X	X	X	X	X
Comoros					
Congo					
Cook Islands					
Costa Rica	X	X	X	X	X
Côte d'Ivoire					
Croatia[b]	X	X	X	X	X
Cuba					
Curaçao	X		X	X	
Cyprus[b]	X	X	X	X	X
Czechia	X	X	X	X	X
Democratic People's Republic of Korea	X	X		X	X
Democratic Republic of the Congo	X	X	X	X	X
Denmark[b]	X	X	X	X	X
Djibouti					
Dominica		X	X	X	
Dominican Republic	X	X	X	X	X
Ecuador	X	X	X	X	X
Egypt	X	X	X	X	X
El Salvador	X	X	X	X	X
Equatorial Guinea					
Eritrea					
Estonia[b]	X	X	X	X	X
Eswatini[d]					
Ethiopia					
Falkland Islands (Malvinas)					
Fiji					
Finland[b]	X	X	X	X	X

Country or territory	*2017*	*2018*	*2019*	*2020*	*2021*
France[b]	X	X	X	X	X
French Polynesia[a]					
Gabon		X	X	X	X
Gambia					
Georgia	X	X	X	X	X
Germany[b]	X	X	X	X	X
Ghana	X		X	X	X
Gibraltar					
Greece[b]	X	X	X		X
Grenada					
Guatemala	X	X	X	X	X
Guinea					
Guinea-Bissau					
Guyana		X	X		X
Haiti		X		X	X
Holy See[e]					
Honduras	X	X	X	X	X
Hungary[b]	X	X	X	X	X
Iceland	X		X	X	X
India	X	X	X	X	X
Indonesia	X	X	X	X	
Iran (Islamic Republic of)	X	X	X	X	X
Iraq			X	X	X
Ireland[b]	X	X	X	X	X
Israel	X	X	X	X	X
Italy[b]	X	X	X	X	X
Jamaica	X	X	X	X	X
Japan	X	X	X	X	X
Jordan	X	X	X	X	X
Kazakhstan	X	X	X	X	X
Kenya	X				X
Kiribati					
Kuwait					X
Kyrgyzstan		X	X	X	X
Lao People's Democratic Republic	X	X	X	X	X
Latvia[b]	X	X	X	X	X
Lebanon	X	X	X	X	X
Lesotho					
Liberia					
Libya					
Liechtenstein[f]					
Lithuania[b]	X	X	X	X	X
Luxembourg[b]	X		X	X	X
Madagascar		X	X	X	X
Malawi					

Country or territory	2017	2018	2019	2020	2021
Malaysia	X	X	X	X	X
Maldives			X	X	
Mali					
Malta[b]	X	X	X	X	X
Marshall Islands					
Mauritania		X			
Mauritius		X	X	X	X
Mexico	X	X	X	X	X
Micronesia (Federated States of)				X	
Monaco	X	X	X	X	X
Mongolia	X				X
Montenegro	X	X	X	X	X
Montserrat[a]	X	X			
Morocco	X	X	X	X	X
Mozambique		X	X	X	X
Myanmar	X	X	X	X	X
Namibia					
Nauru					
Nepal	X			X	
Netherlands[b]	X	X	X	X	X
New Caledonia[a]					
New Zealand	X	X	X	X	X
Nicaragua	X	X	X	X	X
Niger				X	
Nigeria	X	X	X	X	X
Niue					
Norfolk Island[a,c]			X		
North Macedonia[g]		X		X	X
Norway	X	X	X	X	X
Oman	X				
Pakistan	X	X	X		X
Palau					
Panama	X	X	X	X	X
Papua New Guinea					
Paraguay	X		X	X	X
Peru		X	X	X	X
Philippines	X	X	X	X	X
Poland[b]	X	X	X	X	X
Portugal[b]	X	X	X	X	X
Qatar	X	X	X	X	X
Republic of Korea	X	X	X		X
Republic of Moldova	X	X		X	X
Romania[b]	X	X	X	X	X
Russian Federation	X	X	X	X	X
Rwanda			X	X	

Country or territory	*2017*	*2018*	*2019*	*2020*	*2021*
Saint Helena					
Saint Kitts and Nevis					
Saint Lucia	X	X	X	X	X
Saint Vincent and the Grenadines		X	X	X	
Samoa					
San Marino		X			X
Sao Tome and Principe					
Saudi Arabia	X	X	X	X	X
Senegal		X			
Serbia	X	X	X	X	X
Seychelles					
Sierra Leone		X	X	X	X
Singapore	X	X	X	X	X
Sint Maarten					
Slovakia[b]	X	X	X	X	X
Slovenia[b]	X	X	X	X	X
Solomon Islands					
Somalia					
South Africa	X	X	X	X	X
South Sudan	X	X			
Spain[b]	X	X	X	X	X
Sri Lanka	X	X			X
Sudan	X	X	X	X	X
Suriname		X	X	X	
Sweden[b]	X	X	X	X	X
Switzerland	X	X	X	X	X
Syrian Arab Republic	X	X	X	X	X
Tajikistan	X	X	X	X	X
Thailand	X	X	X	X	X
Timor-Leste			X		
Togo					X
Tonga					
Trinidad and Tobago	X	X	X	X	X
Tristan da Cunha					
Tunisia	X	X	X	X	
Türkiye[h]	X	X	X	X	X
Turkmenistan					X
Turks and Caicos Islands[a]					
Tuvalu					
Uganda		X	X	X	X
Ukraine	X	X	X	X	X
United Arab Emirates	X	X	X	X	X
United Kingdom of Great Britain and Northern Ireland[i]	X	X	X	X	X
United Republic of Tanzania	X	X	X	X	X

Country or territory	*2017*	*2018*	*2019*	*2020*	*2021*
United States of America	X	X	X	X	X
Uruguay	X	X	X	X	X
Uzbekistan	X	X	X	X	X
Vanuatu					
Venezuela (Bolivarian Republic of)	X	X	X	X	X
Viet Nam	X	X	X		
Wallis and Futuna Islands[a]					
Yemen		X	X	X	
Zambia					
Zimbabwe	X	X	X	X	X
Total number of Governments that submitted form D	**122**	**129**	**134**	**126**	**127**
Total number of Governments requested to provide information	**213**	**213**	**213**	**213**	**213**

[a] Territorial application of the 1988 Convention has been confirmed by the authorities concerned.
[b] State member of the European Union.
[c] Information was provided by Australia.
[d] Since 19 April 2018, "Eswatini" has replaced "Swaziland" as the short name used in the United Nations.
[e] The Holy See did not furnish form D separately as its data are included in the report of Italy.
[f] Liechtenstein did not furnish form D separately as its data are included in the report of Switzerland.
[g] Since 14 February 2019, "North Macedonia" has replaced "the former Yugoslav Republic of Macedonia" as the short name used in the United Nations.
[h] Since 31 May 2022, "Türkiye" has replaced "Turkey" as the short name used in the United Nations.
[i] The United Kingdom ceased to be a member of the European Union on 31 January 2020.

Annex III

Seizures of substances in Tables I and II of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988, as reported to the International Narcotics Control Board, 2017–2021

1. Tables A and B show information on seizures of the substances included in Tables I and II of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988, furnished to the International Narcotics Control Board (INCB) by Governments in accordance with article 12, paragraph 12, of the Convention. **To enhance user-friendliness, tables A and B have not been included in the present report but are available in spreadsheet format on the INCB website, in the section on the annual reports on precursors.**

Annex IV

Submission of information by Governments on licit trade in, legitimate uses of and requirements for substances in Tables I and II of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988 for the years 2017–2021

Notes: The names of non-metropolitan territories and special administrative regions are in italics.
A blank signifies that no information was provided.
"X" signifies that a completed form D (or equivalent report) was submitted (including forms in which all fields contained "nil", "0", "none", etc.).

Country or territory	*2017*		*2018*		*2019*		*2020*		*2021*	
	Trade	*Uses and/or require-ments*	*Trade*	*Uses and/or require-ments*	*Trade*	*Uses and/or require-ments*	*Trade*	*Uses and/or require-ments*	*Trade*	*Uses and/or require-ments*
Afghanistan	X	X	X	X	X		X	X		
Albania	X	X	X	X	X	X			X	X
Algeria	X	X	X		X	X				
Andorra	X				X	X	X	X		
Angola	X	X	X		X					
Anguilla										
Antigua and Barbuda										
Argentina	X	X	X	X	X	X	X	X	X	X
Armenia	X	X	X		X		X	X	X	
Aruba										
Ascension										
Australia	X	X			X	X	X	X	X	
Austria[a]	X	X	X	X	X	X	X	X	X	X
Azerbaijan	X	X	X	X	X	X			X	X
Bahamas										
Bahrain	X	X	X	X	X	X	X	X	X	X
Bangladesh	X	X								
Barbados										
Belarus	X	X		X	X	X			X	X
Belgium[a]	X	X	X	X	X	X	X	X	X	X
Belize	X	X								
Benin	X	X	X	X					X	X
Bermuda										
Bhutan	X	X	X	X	X	X	X	X	X	X

Country or territory	2017		2018		2019		2020		2021	
	Trade	Uses and/or require-ments	Trade	Uses and/or require-ments	Trade	Uses and/or require-ments	Trade	Uses and/or require-ments	Trade	Uses and/or require-ments
Bolivia (Plurinational State of)	X	X	X	X	X	X	X	X	X	X
Bosnia and Herzegovina	X	X	X	X	X	X	X	X		
Botswana	X						X	X	X	X
Brazil	X	X	X	X	X	X	X	X		
British Virgin Islands										
Brunei Darussalam	X	X	X	X	X	X	X		X	X
Bulgaria[a]	X	X	X	X	X	X	X	X	X	X
Burkina Faso										
Burundi					X	X				
Cabo Verde	X	X	X	X						
Cambodia										
Cameroon					X		X		X	
Canada	X	X	X	X	X	X	X	X	X	X
Cayman Islands										
Central African Republic										
Chad										
Chile	X	X	X	X	X	X	X	X	X	X
China			X	X	X	X	X	X	X	X
China, Hong Kong SAR			X	X	X	X	X	X		
China, Macao SAR			X	X						
Christmas Island										
Cocos (Keeling) Islands										
Colombia	X	X	X	X	X	X	X	X	X	X
Comoros										
Congo										
Cook Islands										
Costa Rica	X	X	X	X	X	X	X	X	X	X
Côte d'Ivoire										
Croatia[a]	X	X	X	X	X	X	X		X	X
Cuba										
Curaçao	X	X			X	X	X	X		
Cyprus	X	X	X	X	X	X	X	X	X	X
Czechia[a]	X	X	X	X	X	X	X	X	X	X
Democratic People's Republic of Korea	X	X		X				X		X

Country or territory	2017		2018		2019		2020		2021	
	Trade	Uses and/or require-ments	Trade	Uses and/or require-ments	Trade	Uses and/or require-ments	Trade	Uses and/or require-ments	Trade	Uses and/or require-ments
Democratic Republic of the Congo	X		X	X	X	X	X		X	X
Denmark[a]	X		X	X	X		X		X	X
Djibouti										
Dominica										
Dominican Republic	X	X	X	X	X	X	X	X	X	X
Ecuador	X	X	X	X	X	X	X	X	X	X
Egypt	X	X	X	X	X	X	X	X	X	X
El Salvador	X	X	X	X	X	X	X	X	X	X
Equatorial Guinea										
Eritrea										
Estonia[a]	X	X			X	X	X		X	
Eswatini[b]										
Ethiopia										
Falkland Islands (Malvinas)										
Fiji										
Finland[a]	X	X	X	X	X	X	X	X	X	
France[a]	X	X	X	X	X	X	X	X	X	X
French Polynesia										
Gabon			X		X		X	X	X	
Gambia										
Georgia	X	X	X	X	X	X	X	X	X	X
Germany[a]	X	X	X	X	X	X	X	X	X	X
Ghana	X	X			X	X	X	X	X	X
Gibraltar										
Greece[a]	X	X	X	X	X				X	
Grenada										
Guatemala	X	X	X	X	X	X	X	X	X	X
Guinea										
Guinea-Bissau										
Guyana				X		X			X	X
Haiti			X				X	X	X	X
Holy See[c]										
Honduras	X	X	X	X	X	X	X	X	X	X
Hungary[a]	X	X	X	X	X	X	X	X	X	X
Iceland	X	X			X	X	X	X	X	X
India	X	X	X	X	X	X	X	X	X	X
Indonesia	X	X	X		X		X	X		
Iran (Islamic Republic of)	X	X	X	X	X	X	X	X	X	X

Country or territory	2017		2018		2019		2020		2021	
	Trade	Uses and/or require-ments	Trade	Uses and/or require-ments	Trade	Uses and/or require-ments	Trade	Uses and/or require-ments	Trade	Uses and/or require-ments
Iraq							X	X	X	X
Ireland[a]	X	X	X	X	X	X	X	X	X	X
Israel	X	X	X	X	X	X	X	X	X	X
Italy[a]	X	X	X	X	X	X	X	X	X	X
Jamaica	X	X	X	X	X	X	X	X	X	X
Japan	X	X	X	X	X	X	X	X	X	X
Jordan	X	X	X	X	X	X	X	X	X	X
Kazakhstan	X	X	X	X	X	X	X	X	X	X
Kenya	X	X							X	X
Kiribati										
Kuwait									X	X
Kyrgyzstan			X	X	X	X	X	X	X	X
Lao People's Democratic Republic	X	X	X	X	X	X	X	X	X	X
Latvia[a]	X	X	X	X	X	X	X	X	X	X
Lebanon	X	X	X	X	X	X	X	X	X	X
Lesotho										
Liberia										
Libya										
Liechtenstein[d]										
Lithuania[a]	X	X	X	X	X	X	X	X	X	X
Luxembourg[a]					X	X				
Madagascar			X	X	X	X	X	X	X	X
Malawi										
Malaysia	X	X	X	X	X	X	X	X	X	X
Maldives					X	X	X	X		
Mali										
Malta[a]	X	X		X	X	X	X	X	X	X
Marshall Islands										
Mauritania										
Mauritius			X	X	X	X	X	X	X	X
Mexico	X	X	X	X	X	X	X	X		X
Micronesia (Federated States of)							X	X		
Monaco	X	X	X	X	X	X	X	X		
Mongolia	X	X							X	X
Montenegro	X	X	X	X	X	X	X	X	X	X
Montserrat		X	X	X						
Morocco	X	X	X	X	X	X	X	X	X	X
Mozambique									X	
Myanmar	X	X	X	X	X	X	X	X	X	X
Namibia										

Country or territory	2017		2018		2019		2020		2021	
	Trade	Uses and/or require-ments	Trade	Uses and/or require-ments	Trade	Uses and/or require-ments	Trade	Uses and/or require-ments	Trade	Uses and/or require-ments
Nauru										
Nepal	X						X			
Netherlands[a]	X	X	X	X	X	X	X	X	X	
New Caledonia										
New Zealand	X	X	X	X	X	X	X	X	X	X
Nicaragua	X	X	X		X	X	X	X	X	X
Niger										
Nigeria	X		X		X	X	X	X	X	X
Niue										
Norfolk Island[e]										
North Macedonia[f]			X	X			X		X	
Norway	X	X	X	X	X	X	X	X	X	X
Oman	X	X								
Pakistan	X	X	X	X	X	X	X	X	X	X
Palau										
Panama	X	X	X		X	X	X	X	X	X
Papua New Guinea										
Paraguay					X	X	X	X		
Peru			X	X	X	X	X	X	X	X
Philippines	X	X	X	X	X	X	X	X	X	X
Poland[a]	X	X	X	X	X	X	X	X	X	X
Portugal[a]	X	X	X	X	X	X	X	X	X	X
Qatar	X	X	X	X	X	X	X	X	X	
Republic of Korea	X	X	X	X	X	X			X	X
Republic of Moldova	X	X	X	X					X	
Romania[a]	X	X	X	X	X	X	X	X	X	X
Russian Federation	X	X	X	X	X	X	X	X	X	X
Rwanda					X	X	X	X		
Saint Helena										
Saint Kitts and Nevis										
Saint Lucia	X	X	X		X	X	X	X	X	X
Saint Vincent and the Grenadines			X	X	X	X	X	X		
Samoa										
San Marino[c]									X	X
Sao Tome and Principe										
Saudi Arabia	X	X	X	X	X	X	X		X	X
Senegal			X	X						
Serbia	X	X	X	X	X	X	X	X	X	X

Country or territory	2017		2018		2019		2020		2021	
	Trade	Uses and/or require-ments	Trade	Uses and/or require-ments	Trade	Uses and/or require-ments	Trade	Uses and/or require-ments	Trade	Uses and/or require-ments
Seychelles										
Sierra Leone				X	X	X	X	X	X	X
Singapore		X			X		X		X	
Sint Maarten										
Slovakia[a]	X	X	X	X	X	X	X	X	X	X
Slovenia[a]	X	X	X	X	X	X	X	X	X	X
Solomon Islands										
Somalia										
South Africa	X	X	X	X	X	X	X	X	X	X
South Sudan	X	X	X	X						
Spain[a]	X	X	X	X	X		X	X	X	X
Sri Lanka	X	X	X	X					X	X
Sudan	X	X	X	X	X	X	X	X	X	X
Suriname			X	X						
Sweden[a]	X	X	X	X	X	X	X		X	X
Switzerland	X	X	X	X	X	X	X	X	X	X
Syrian Arab Republic	X	X	X	X	X				X	X
Tajikistan	X	X	X	X	X			X	X	X
Thailand	X	X	X	X	X	X	X	X	X	X
Timor-Leste					X	X				
Togo									X	X
Tonga										
Trinidad and Tobago	X	X	X	X	X	X	X	X	X	X
Tristan da Cunha										
Tunisia	X	X	X	X	X	X	X	X		
Türkiye[g]	X	X	X	X	X	X			X	X
Turkmenistan									X	X
Turks and Caicos Islands										
Tuvalu										
Uganda			X	X	X	X	X	X	X	X
Ukraine	X	X	X	X	X	X	X	X	X	X
United Arab Emirates	X	X	X	X	X	X	X	X	X	
United Kingdom of Great Britain and Northern Ireland[h]	X	X	X	X	X		X	X	X	X
United Republic of Tanzania	X	X	X	X	X	X	X	X	X	X
United States of America	X	X	X	X	X	X	X	X	X	X
Uruguay	X	X	X	X	X	X	X	X	X	X

Country or territory	2017		2018		2019		2020		2021	
	Trade	Uses and/or require-ments	Trade	Uses and/or require-ments	Trade	Uses and/or require-ments	Trade	Uses and/or require-ments	Trade	Uses and/or require-ments
Uzbekistan	X	X	X	X	X	X	X	X	X	X
Vanuatu										
Venezuela (Bolivarian Republic of)	X	X	X	X	X	X	X		X	X
Viet Nam			X	X	X	X				
Wallis and Futuna Islands										
Yemen			X	X	X		X	X		
Zambia										
Zimbabwe	X	X			X	X	X	X		
Total number of Governments that submitted information on form D	**117**	**113**	**117**	**111**	**118**	**106**	**116**	**106**	**117**	**106**
Total number of Governments requested to provide information	**213**	**213**	**213**	**213**	**213**	**213**	**213**	**213**	**213**	**213**

[a] State member of the European Union.
[b] Since 19 April 2018, "Eswatini" has replaced "Swaziland" as the short name used in the United Nations.
[c] The Government of Italy includes on form D licit trade data for the Holy See.
[d] The Government of Switzerland includes on form D licit trade data for Liechtenstein.
[e] The information was provided by Australia.
[f] Since 14 February 2019, "North Macedonia" has replaced "the former Yugoslav Republic of Macedonia" as the short name used in the United Nations.
[g] Since 31 May 2022, "Türkiye" has replaced "Turkey" as the short name used in the United Nations.
[h] The United Kingdom ceased to be a member of the European Union on 31 January 2020.

Annex V

Annual legitimate requirements for ephedrine, pseudoephedrine, 3,4-methylenedioxyphenyl-2-propanone and 1-phenyl-2-propanone; substances frequently used in the manufacture of amphetamine-type stimulants

1. In its resolution 49/3, entitled "Strengthening systems for the control of precursor chemicals used in the manufacture of synthetic drugs", the Commission on Narcotic Drugs:

(a) Requested Member States to provide to the International Narcotics Control Board (INCB) annual estimates of their legitimate requirements for 3,4-methylenedioxyphenyl-2-propanone (3,4-MDP-2-P), pseudoephedrine, ephedrine and 1-phenyl-2-propanone (P-2-P) and, to the extent possible, estimated requirements for imports of preparations containing those substances that could be easily used or recovered by readily applicable means;

(b) Requested the Board to provide those estimates to Member States in such a manner as to ensure that such information was used only for drug control purposes;

(c) Invited Member States to report to the Board on the feasibility and usefulness of preparing, reporting and using estimates of legitimate requirements for the precursor chemicals and preparations referred to above in preventing diversion.

2. Pursuant to that resolution, the Board formally invited Governments to prepare estimates of their legitimate requirements for those substances. Those estimates, as reported by Governments, were published for the first time in March 2007.

3. The Board has prepared a table reflecting the latest data reported by Governments on those four precursor chemicals (and their preparations, as relevant). It is expected that those data will provide the competent authorities of exporting countries with at least an indication of the legitimate requirements of importing countries, thus preventing diversion attempts.

4. **To enhance user-friendliness, the table has not been included in the present report but is available in spreadsheet format on the INCB website, in the section on the annual reports on precursors. The data are current as at 1 November 2022.**

5. Governments are invited to review their requirements as published, amend them as necessary and inform the Board of any required change. Regular updates of the table will be available throughout the year on the Board's website, in the section on precursors (see the section on annual legitimate requirements under the "Tools and Kits" menu).

Annex VI

Governments that have requested pre-export notifications pursuant to article 12, paragraph 10 (a), of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988

1. Governments of all exporting countries and territories are reminded that it is an obligation to provide pre-export notifications to Governments that have requested them pursuant to article 12, paragraph 10 (a), of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988, which provides that:

> "upon request to the Secretary-General by the interested Party, each Party from whose territory a substance in Table I is to be exported shall ensure that, prior to such export, the following information is supplied by its competent authorities to the competent authorities of the importing country:
>
> "(i) Name and address of the exporter and importer and, when available, the consignee;
> "(ii) Name of the substance in Table I;
> "(iii) Quantity of the substance to be exported;
> "(iv) Expected point of entry and expected date of dispatch;
> "(v) Any other information which is mutually agreed upon by the Parties."

2. Governments that have requested pre-export notifications are listed in the table below in alphabetical order, followed by the substance (or substances) for which pre-export notifications were requested, and the date of notification of the request transmitted by the Secretary-General to Governments.

3. The information is current as at 1 November 2022.

Notifying Government	*Substances for which pre-export notifications have been requested*	*Date of communication to Governments by the Secretary-General*
Afghanistan[a]	All substances included in Tables I and II	13 July 2010
Algeria[a]	All substances included in Tables I and II	10 October 2013
Antigua and Barbuda[a]	All substances included in Tables I and II	5 May 2000
Argentina	All substances included in Table I	19 November 1999
Armenia[a]	All substances included in Tables I and II[b,c]	4 July 2013
Australia[a]	All substances included in Tables I and II	12 February 2010
Austria	All substances included in Table I	19 May 2000[d]
Azerbaijan[a]	All substances included in Tables I and II	21 January 2011
Bangladesh[a]	All substances included in Tables I and II	12 May 2015
Barbados[a]	All substances included in Tables I and II[b,c]	24 October 2013
Belarus[e]	Acetic anhydride, ephedrine, potassium permanganate and pseudoephedrine	12 October 2000
Belgium	All substances included in Table I	19 May 2000[d]
Benin[a]	All substances included in Tables I and II	4 February 2000
Bhutan[a]	All substances included in Tables I and II	6 July 2018

Notifying Government	*Substances for which pre-export notifications have been requested*	*Date of communication to Governments by the Secretary-General*
Bolivia (Plurinational State of)[a]	Acetic anhydride, acetone, ethyl ether, hydrochloric acid, potassium permanganate and sulphuric acid	12 November 2001
Brazil[a]	All substances included in Tables I and II	15 October 1999 and 15 December 1999
Bulgaria	All substances included in Table I	19 May 2000d
Canada[a]	All substances included in Tables I and II	31 October 2005
Cayman Islands[a]	All substances included in Tables I and II	7 September 1998
Chile[a]	All substances included in Tables I and II	19 October 2012
China	Acetic anhydride	20 October 2000
China, Hong Kong SAR[a]	All substances included in Tables I and II	28 December 2012
China, Macao SAR[a]	All substances included in Tables I and II	28 December 2012
Colombia[a]	All substances included in Tables I and II	14 October 1998
Costa Rica[a]	All substances included in Tables I and II	27 September 1999
Côte d'Ivoire[a]	All substances included in Tables I and II	26 June 2013
Croatia	All substances included in Table I	19 May 2000[d]
Cyprus	All substances included in Table I	19 May 2000[d]
Czechia	All substances included in Table I	19 May 2000[d]
Denmark	All substances included in Table I	19 May 2000[d]
Dominican Republic[a]	All substances included in Tables I and II	11 September 2002
Ecuador[a]	All substances included in Tables I and II	1 August 1996
Egypt[a]	All substances included in Table I, and acetone	3 December 2004
El Salvador[a]	All substances included in Tables I and II	29 July 2010
Estonia	All substances included in Table I	19 May 2000[d]
Ethiopia[a]	All substances included in Tables I and II	17 December 1999
European Union (on behalf of all its member States)[f]	All substances included in Table I	19 May 2000[d]
Finland	All substances included in Table I	19 May 2000[d]
France	All substances included in Table I	19 May 2000[d]
Georgia[a]	All substances included in Tables I and II	7 September 2016
Germany	All substances included in Table I	19 May 2000[d]
Ghana[a]	All substances included in Tables I and II	26 February 2010
Greece	All substances included in Table I	19 May 2000[d]
Haiti[a]	All substances included in Tables I and II	20 June 2002
Honduras	Acetic anhydride, *N*-acetylanthranilic acid, 4-anilino-*N*-phenethylpiperidine (ANPP), ephedrine, ergometrine, ergotamine, isosafrole, lysergic acid, 3,4-methylenedioxyphenyl-2-propanone (3,4-MDP-2-P), norephedrine, *N*-phenethyl-4-piperidone (NPP), phenylacetic acid, *alpha*-phenylacetoacetonitrile (APAAN), 1-phenyl-2-propanone (P-2-P), piperonal, potassium permanganate, pseudoephedrine and safrole	18 June 2020
Hungary	All substances included in Table I	19 May 2000[d]
Iceland[a]	All substances included in Tables I and II	11 May 2021
India[a]	All substances included in Tables I and II	23 March 2000

Notifying Government	*Substances for which pre-export notifications have been requested*	*Date of communication to Governments by the Secretary-General*
Indonesia[a]	Acetic anhydride, N-acetylanthranilic acid, anthranilic acid, ephedrine, ergometrine, ergotamine, isosafrole, 3,4-methylenedioxyphenyl-2-propanone, phenylacetic acid, 1-phenyl-2-propanone, piperonal, pseudoephedrine and safrole	18 February 2000
Iraq[a]	All substances included in Tables I and II[b,c]	31 July 2013
Ireland	All substances included in Table I	19 May 2000[d]
Italy	All substances included in Table I	19 May 2000[d]
Jamaica	All substances included in Table I[b,c]	4 July 2013
Japan	All substances included in Table I	17 December 1999
Jordan[a]	All substances included in Tables I and II	15 December 1999
Kazakhstan[a]	All substances included in Tables I and II	15 August 2003
Kenya[a]	All substances included in Tables I and II[b,c]	10 October 2013
Kyrgyzstan[a]	All substances included in Tables I and II[b,c]	21 October 2013
Latvia	All substances included in Table I	19 May 2000[d]
Lebanon[a]	All substances included in Tables I and II	14 June 2002
Libya[a]	All substances included in Tables I and II[b,c]	21 August 2013
Lithuania	All substances included in Table I	19 May 2000[d]
Luxembourg	All substances included in Table I	19 May 2000[d]
Madagascar[a]	All substances included in Tables I and II	31 March 2003
Malaysia[a]	All substances included in Table I[b] and II	21 August 1998 and 22 September 2021
Maldives[a]	All substances included in Tables I and II	6 April 2005
Malta	All substances included in Table I	19 May 2000[d]
Mexico[a]	All substances included in Tables I and II	6 April 2005
Micronesia (Federated States of)[a]	All substances included in Tables I and II[b,c]	11 February 2014
Myanmar[a]	All substances included in Tables I and II	4 November 2016
Netherlands	All substances included in Table I	19 May 2000d
New Zealand[a]	All substances included in Tables I and II[b,c]	3 April 2014
Nicaragua[a]	All substances included in Tables I and II	8 January 2014
Nigeria[a]	All substances included in Tables I and II	28 February 2000
Norway[a]	All substances included in Table I,[c] and anthranilic acid, ethyl ether and piperidine	17 December 2013
Oman[a]	All substances included in Tables I and II	16 April 2007
Pakistan[a]	All substances included in Tables I and II	12 November 2001 and 6 March 2013
Panama	Ephedrine, ergometrine, ergotamine, norephedrine, pseudoephedrine	14 August 2013
Paraguay[a]	All substances included in Tables I and II	3 February 2000
Peru[a]	Acetic anhydride, acetone, ephedrine, ergometrine, ergotamine, ethyl ether, hydrochloric acid, lysergic acid, methyl ethyl ketone, norephedrine, potassium permanganate, pseudoephedrine, sulphuric acid and toluene	27 September 1999
Philippines[a]	All substances included in Tables I and II	16 April 1999
Poland	All substances included in Table I	19 May 2000[d]

Notifying Government	*Substances for which pre-export notifications have been requested*	*Date of communication to Governments by the Secretary-General*
Portugal	All substances included in Table I	19 May 2000d
Qatar[a]	All substances included in Tables I and II[b,c]	16 July 2013
Republic of Korea[a]	All substances included in Table I, and acetone	3 June 2008
Republic of Moldova[a]	All substances included in Tables I and II[b,c]	29 December 1998 and 8 November 2013
Romania	All substances included in Table I	19 May 2000[d]
Russian Federation[a]	Acetic anhydride, ephedrine, ergometrine, ergotamine, 3,4-methylenedioxyphenyl-2-propanone, norephedrine, phenylacetic acid, 1-phenyl-2-propanone, potassium permanganate, pseudoephedrine and all substances included in Table II	21 February 2000
Saint Vincent and the Grenadines[a]	All substances included in Tables I and II[b,c]	16 July 2013
Saudi Arabia[a]	All substances included in Tables I and II	18 October 1998
Sierra Leone[a]	All substances included in Tables I and II[b,c]	5 July 2013
Singapore	All substances included in Table I	5 May 2000
Slovakia	All substances included in Table I	19 May 2000[d]
Slovenia	All substances included in Table I	19 May 2000[d]
South Africa[a]	All substances included in Table I, and anthranilic acid	11 August 1999
Spain	All substances included in Table I	19 May 2000[d]
Sri Lanka	All substances included in Table I	19 November 1999
Sudan[a]	All substances included in Tables I and II	6 May 2015
Sweden	All substances included in Table I	19 May 2000[d]
Switzerland	All substances included in Table I	25 March 2013
Syrian Arab Republic[a]	All substances included in Tables I and II	24 October 2013
Tajikistan[a]	All substances included in Tables I and II	7 February 2000
Thailand[a]	All substances included in Table I (except potassium permanganate), and anthranilic acid[b]	18 October 2010
Togo[a]	All substances included in Tables I and II	6 August 2013
Tonga[a]	All substances included in Tables I and II[b,c]	4 July 2013
Trinidad and Tobago[a]	All substances included in Tables I and II[b,c]	15 August 2013
Tunisia[a]	Acetic anhydride, *N*-acetylanthranilic acid, 4-anilino-*N*-phenethylpiperidine (ANPP), ephedrine, ergometrine, ergotamine, isosafrole, lysergic acid, 3,4-methylenedioxyphenyl-2-propanone (3,4-MDP-2-P), norephedrine, *N*-phenethyl-4-piperidone (NPP), phenylacetic acid, *alpha*-phenylacetoacetonitrile (APAAN), 1-phenyl-2-propanone (P-2-P), piperonal, potassium permanganate, pseudoephedrine, safrole and all substances included in Table II	22 June 2020
Türkiye[a,g]	All substances included in Tables I and II	2 November 1995
Uganda[a]	All substances included in Tables I and II[b,c]	6 May 2014
United Arab Emirates[a]	All substances included in Tables I[b] and II	26 September 1995
United Kingdom of Great Britain and Northern Ireland[h]	All substances included in Table I	19 May 2000
United Republic of Tanzania[a]	All substances included in Tables I and II	10 December 2002
United States of America	Acetic anhydride, ephedrine and pseudoephedrine	2 June 1995 and 19 January 2001

Notifying Government	*Substances for which pre-export notifications have been requested*	*Date of communication to Governments by the Secretary-General*
Uruguay[a]	All substances included in Tables I and II	30 December 2015
Venezuela (Bolivarian Republic of)[a]	All substances included in Tables I and II	27 March 2000
Yemen[a]	All substances included in Tables I and II	6 May 2014
Zambia[a]	All substances included in Tables I and II	22 June 2022
Zimbabwe[a]	All substances included in Tables I and II[b,c]	4 July 2013

Note: The names of territories are in italics.

[a] The Secretary-General has informed all Governments of the request of the notifying Government to receive a pre-export notification for some or all substances listed in Table II of the 1988 Convention as well.

[b] The Government requested to also receive pre-export notifications for pharmaceutical preparations containing ephedrine and pseudoephedrine.

[c] The Governments requested to also receive pre-export notifications for safrole-rich oils.

[d] On 19 May 2000, the Secretary-General communicated to Governments the request by the European Commission on behalf of the States members of the European Union to receive pre-export notifications for the indicated substances.

[e] Not yet notified by the Secretary-General as, in a subsequent communication, the Government of Belarus requested the Secretary-General to suspend such notification until a national mechanism to receive and process pre-export notifications was established.

[f] Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden.

[g] Since 31 May 2022, "Türkiye" has replaced "Turkey" as the short name used in the United Nations.

[h] The United Kingdom ceased to be a member of the European Union on 31 January 2020.

Annex VII

Substances in Tables I and II of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988

Table I	*Table II*
Acetic anhydride	Acetone
N-Acetylanthranilic acid	Anthranilic acid
4-Anilino-*N*-phenethylpiperidine (ANPP)[a]	Ethyl ether
tert-Butyl 4-(phenylamino)piperidine-1-carboxylate (1-boc-4-AP)[b]	Hydrochloric acid[e]
Ephedrine	Methyl ethyl ketone
Ergometrine	Piperidine
Ergotamine	Sulphuric acid[e]
Isosafrole	Toluene
Lysergic acid	
3,4-MDP-2-P methyl glycidate (“PMK glycidate”)[c]	
3,4-MDP-2-P methyl glycidic acid (“PMK glycidic acid”)[c]	
3,4-Methylenedioxyphenyl-2-propanone (3,4-MDP-2-P)	
Methyl *alpha*-phenylacetoacetate (MAPA)[d]	
Norephedrine	
Norfentanyl[b]	
N-Phenethyl-4-piperidone (NPP)[a]	
Phenylacetic acid	
alpha-Phenylacetoacetamide (APAA)[c]	
alpha-Phenylacetoacetonitrile (APAAN)	
N-Phenyl-4-piperidinamine (4-AP)[b]	
1-Phenyl-2-propanone	
Piperonal	
Potassium permanganate	
Pseudoephedrine	
Safrole	
The salts of the substances listed in this Table, whenever the existence of such salts is possible	The salts of the substances listed in this Table, whenever the existence of such salts is possible

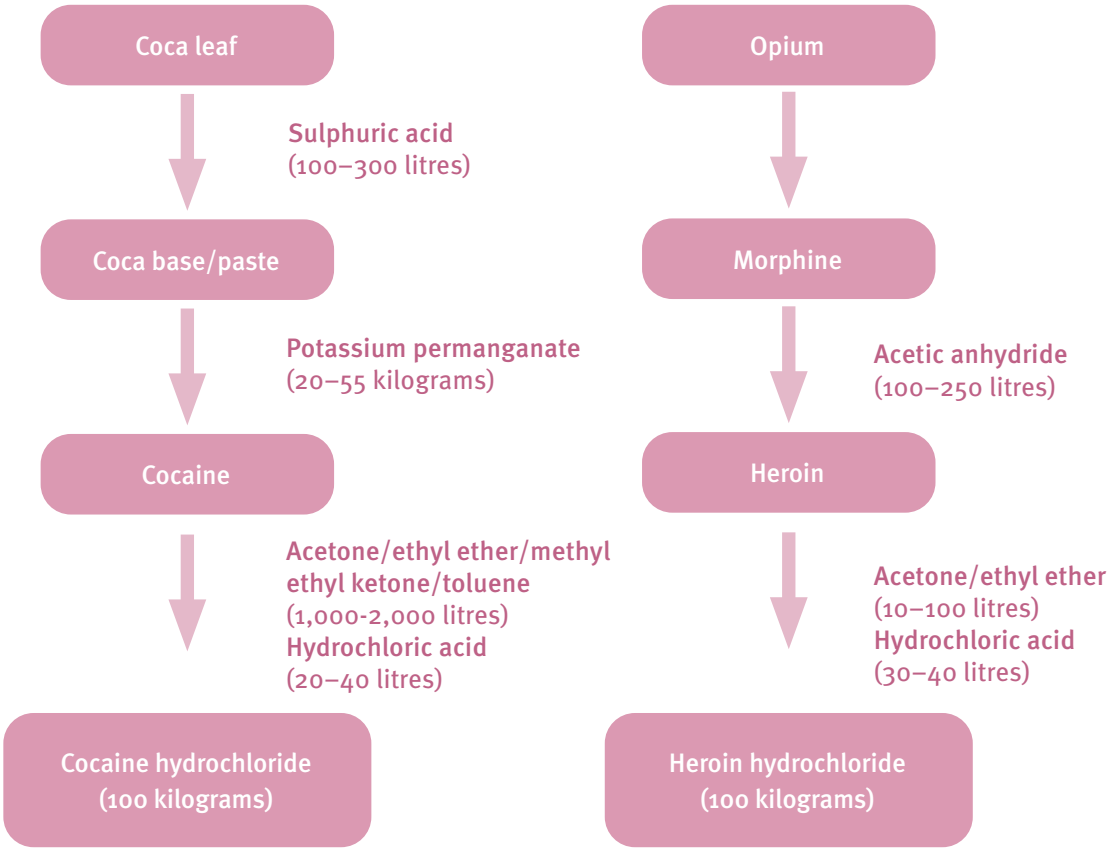
[a] Included in Table I, effective 18 October 2017.
[b] Included in Table I, effective 23 November 2022.
[c] Included in Table I, effective 19 November 2019.
[d] Included in Table I, effective 3 November 2020.
[e] The salts of hydrochloric acid and sulphuric acid are specifically excluded from Table II.

Annex VIII

Use of scheduled substances in the illicit manufacture of narcotic drugs and psychotropic substances

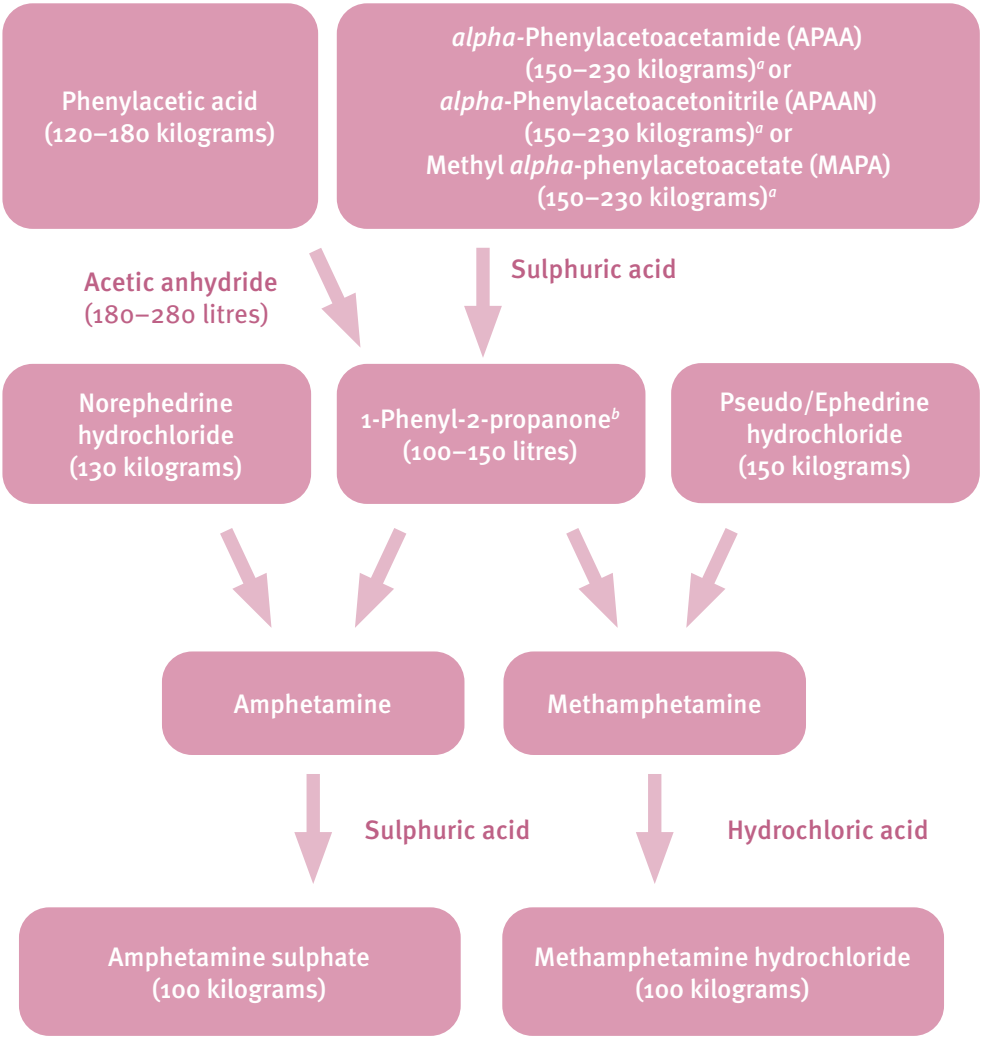
Figures I–VI below depict the use of scheduled substances in the illicit manufacture of narcotic drugs and psychotropic substances. The approximate quantities provided are based on common manufacturing methods. Other manufacturing methods using scheduled substances – or even non-scheduled substances instead of or in addition to scheduled substances – may also be encountered, depending on the geographical location.

Figure I. Illicit manufacture of cocaine and heroin: scheduled substances and the approximate quantities thereof required for the illicit manufacture of 100 kilograms of cocaine or heroin hydrochloride



Note: The extraction of cocaine from coca leaf and the purification of coca paste and the crude base products of cocaine and heroin require solvents, acids and bases. A wide range of such chemicals are used at all stages of drug manufacture.

Figure II. Illicit manufacture of amphetamine and methamphetamine: scheduled substances and the approximate quantities thereof required for the illicit manufacture of 100 kilograms of amphetamine sulphate and methamphetamine hydrochloride

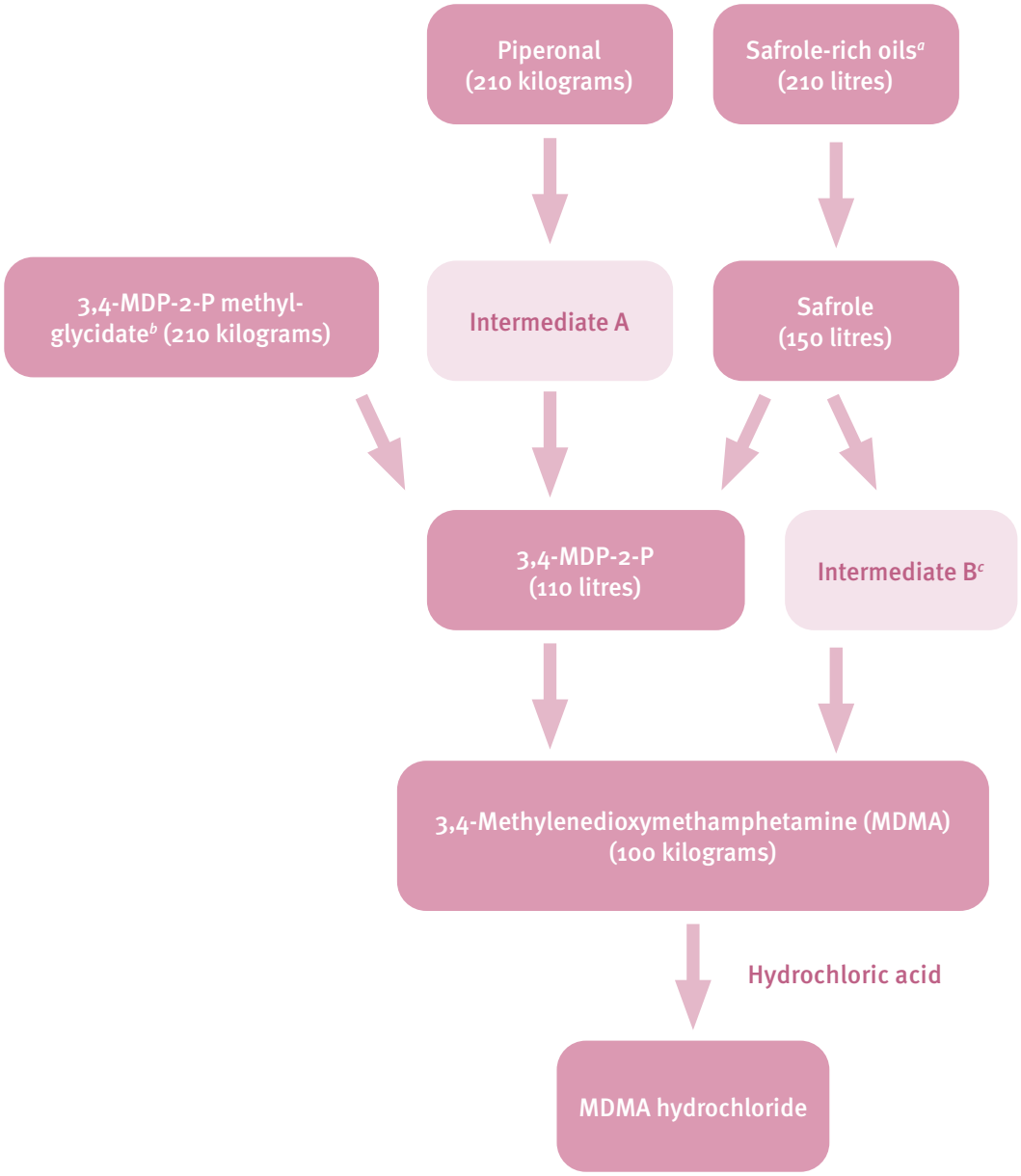


Note: Methcathinone, a less commonly encountered amphetamine-type stimulant, can be manufactured from pseudo/ephedrine hydrochloride, requiring the same approximate quantities as methamphetamine to yield 100 kilograms of hydrochloride salt.

[a]The weight range reflects the fact that APAA, APAAN and MAPA are purpose-made designer precursors without recognized legitimate uses and are therefore often impure (street-level quality).

[b]Methods based on 1-phenyl-2-propanone result in racemic d,l-meth/amphetamine, while methods based on ephedrine, pseudoephedrine or norephedrine result in d-meth/amphetamine. In a subsequent step, racemic d,l-meth/amphetamine can be – and actually is – separated in illicit laboratories to also produce d-meth/amphetamine.

Figure III. Illicit manufacture of 3,4-methylenedioxymethamphetamine (MDMA) and related drugs: scheduled substances and the approximate quantities thereof required for the illicit manufacture of 100 kilograms of MDMA



Note: Isosafrole, another precursor of MDMA under international control, is not included in this scheme, as it is not commonly encountered as a starting material; it is an intermediate in a modification of methods for manufacturing MDMA from safrole, requiring approximately 300 litres of safrole to manufacture 100 kilograms of MDMA.

[a] Assuming the safrole-rich oils have a safrole content of 75 per cent or higher.

[b] Refers, for the purpose of this scheme, to the methyl ester and salts of 3,4-MDP-2-P methyl glycidic acid (i.e. purpose-made designer precursors without recognized legitimate uses that are therefore often impure (street-level quality)).

[c] The manufacture of 100 kilograms of MDMA via intermediate B would require 200 litres of safrole.

Figure IV. Illicit manufacture of methaqualone and phencyclidine: scheduled substances and the approximate quantities thereof required for the illicit manufacture of 100 kilograms of methaqualone and phencyclidine

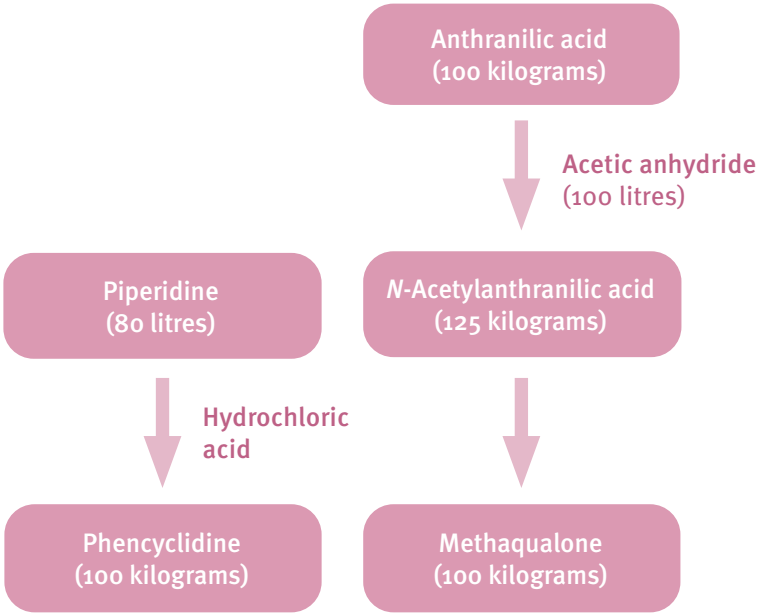


Figure V. Illicit manufacture of lysergic acid diethylamide (LSD): scheduled substances and the approximate quantities thereof required for the illicit manufacture of 1 kilogram of LSD

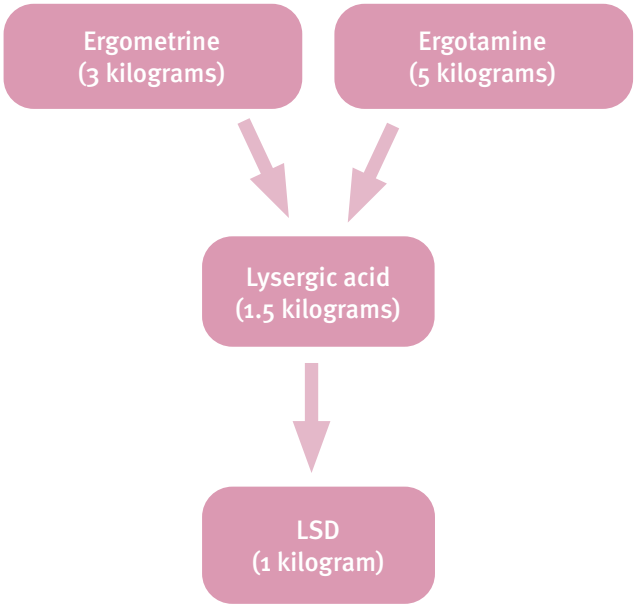
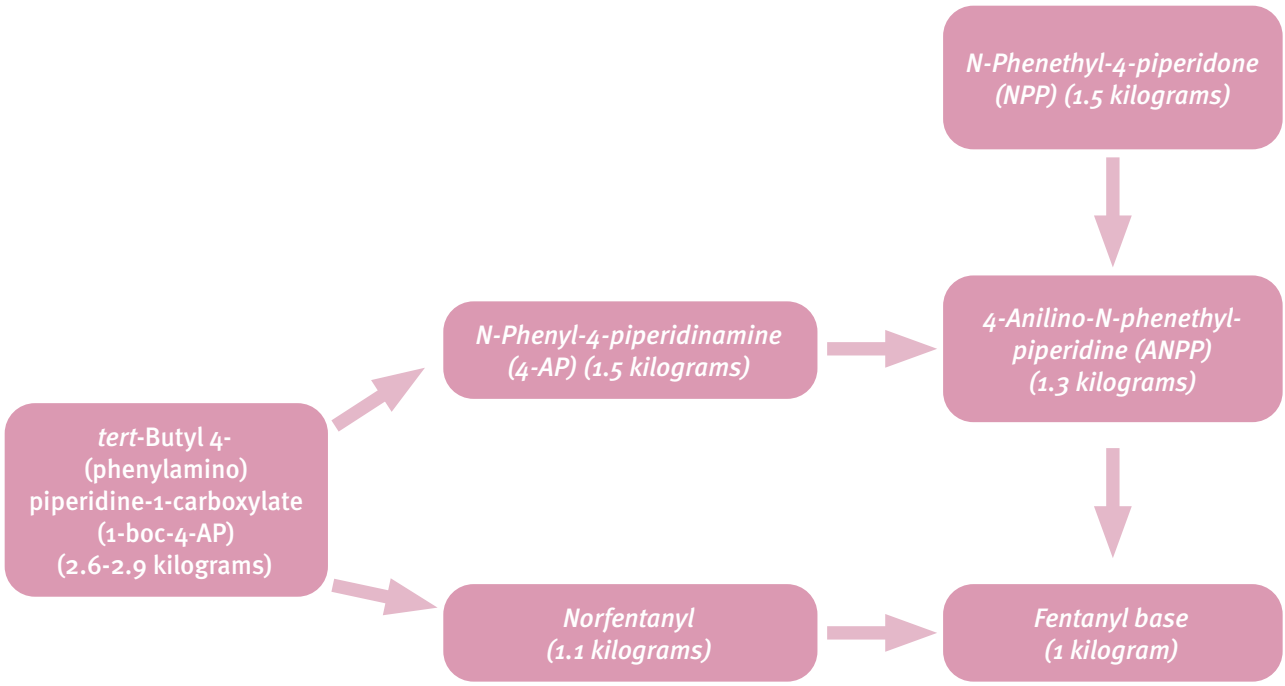


Figure VI. Illicit manufacture of fentanyl: scheduled substances and the approximate quantities thereof required for the illicit manufacture of 1 kilogram of fentanyl



Annex IX

Licit uses of the substances in Tables I and II of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988

Knowledge of the most common licit uses of substances in Tables I and II of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988, including the processes and end products in which the substances may be used, is essential for the verification of the legitimacy of orders or shipments. The most common licit uses of those substances reported to the International Narcotics Control Board are as follows:

Substance	*Licit uses*
Acetic anhydride	Acetylating and dehydrating agent used in the chemical and pharmaceutical industries for the manufacture of cellulose acetate, for textile sizing agents and cold bleaching activators, for polishing metals and for the production of brake fluids, dyes and explosives
Acetone	As a common solvent and intermediate for a variety of substances in the chemical and pharmaceutical industries, including plastics, paints, lubricants, varnishes and cosmetics; also used in the manufacture of other solvents, such as chloroform
N-Acetylanthranilic acid	Used in the manufacture of pharmaceuticals, plastics and fine chemicals
4-Anilino-*N*-phenethylpiperidine (ANPP)	Used in the pharmaceutical industry for the manufacture of fentanyl
tert-Butyl 4-(phenylamino)piperidine-1-carboxylate (1-boc-4-AP)	None, except in small amounts for research, development and laboratory analytical purposes
Anthranilic acid	Chemical intermediate used in the manufacture of dyes, pharmaceuticals and perfumes; also used in the preparation of bird and insect repellents
Ephedrine	Used in the manufacture of bronchodilators (cough medicines)
Ergometrine	Used in the treatment of migraine and as an oxytocic in obstetrics
Ergotamine	Used in the treatment of migraine and as an oxytocic in obstetrics
Ethyl ether	Commonly used solvent in chemical laboratories and in the chemical and pharmaceutical industries; mainly used as an extractant for fats, oils, waxes and resins; also used for the manufacture of munitions, plastics and perfumes and, in medicine, as a general anaesthetic
Hydrochloric acid	Used in the production of chlorides and hydrochlorides, for the neutralization of basic systems and as a catalyst and solvent in organic synthesis
Isosafrole	Used 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; and as a pesticide
Lysergic acid	Used in organic synthesis
Methyl *alpha*-phenylacetoacetate (MAPA)	None, except in small amounts for research, development and laboratory analytical purposes
3,4-Methylenedioxyphenyl-2-propanone	Used in the manufacture of piperonal and other perfume components
3,4-MDP-2-P methyl glycidate	None, except in small amounts for research, development and laboratory analytical purposes
3,4-MDP-2-P methyl glycidic acid	None, except in small amounts for research, development and laboratory analytical purposes
Methyl ethyl ketone	Common solvent; used in the manufacture of coatings, solvents, degreasing agents, lacquers, resins and smokeless powders

Substance	*Licit uses*
Norephedrine	Used in the manufacture of nasal decongestants and appetite suppressants
Norfentanyl	None, except in small amounts for research, development and laboratory analytical purposes (norfentanyl is a chemical intermediate in legitimate fentanyl manufacture but the extent of its use as a starting material is not known)
N-Phenethyl-4-piperidone (NPP)	Used in the pharmaceutical industry, mainly for the manufacture of fentanyl and carfentanil
Phenylacetic acid	Used in the chemical and pharmaceutical industries for the manufacture of phenylacetate esters, amphetamine and some derivatives; also used for the synthesis of penicillins and in fragrance applications and cleaning solutions
alpha-Phenyl-acetoacetamide (APAA)	None, except in small amounts for research, development and laboratory analytical purposes
alpha-Phenyl-acetoacetonitrile (APAAN)	None, except in small amounts for research, development and laboratory analytical purposes
N-Phenyl-4-piperidinamine (4-AP)	May be used as a building block in the manufacture of pharmaceutical substances, including fentanyl, but the extent of its use for legitimate manufacture is not known
1-Phenyl-2-propanone	Used in the chemical and pharmaceutical industries for the manufacture of amphetamine, methamphetamine and some derivatives; also used for the synthesis of propylhexedrine
Piperidine	Commonly used solvent and reagent in chemical laboratories and in the chemical and pharmaceutical industries; also used in the manufacture of rubber products and plastics
Piperonal	Used in perfumery, in cherry and vanilla flavours, in organic synthesis and as a component of mosquito repellent
Potassium permanganate	Important reagent in analytical and synthetic organic chemistry; used in bleaching applications, disinfectants, and antibacterial and antifungal agents, and in water purification
Pseudoephedrine	Used in the manufacture of bronchodilators and nasal decongestants
Safrole	Used in perfumery, for example, in the manufacture of piperonal, and for denaturing fats in soap manufacture
Sulphuric acid	Used in the production of sulphates; as an acidic oxidizer; as a dehydrating and purifying agent; for the neutralization of alkaline solutions; as a catalyst in organic synthesis; in the manufacture of fertilizers, explosives, dyestuffs and paper; and as a component of drain and metal cleaners, anti-rust compounds and automobile battery fluids
Toluene	Industrial solvent; used in the manufacture of explosives, dyes, coatings and other organic substances and as a gasoline additive

Annex X

Treaty provisions for the control of substances frequently used in the illicit manufacture of narcotic drugs and psychotropic substances

1. Article 2, paragraph 8, of the Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol provides that parties shall use their best endeavours to apply to substances which do not fall under the Convention, but which may be used in the illicit manufacture of drugs, such measures of supervision as may be practicable.

2. Article 2, paragraph 9, of the Convention on Psychotropic Substances of 1971 provides that parties shall use their best endeavours to apply to substances which do not fall under the Convention, but which may be used in the illicit manufacture of psychotropic substances, such measures of supervision as may be practicable.

3. Article 12 of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988 contains provisions for the following:

(a) General obligation for parties to take measures to prevent diversion of the substances in Tables I and II of the Convention and to cooperate with each other to that end (para. 1);

(b) Mechanism for amending the scope of control (paras. 2–7);

(c) Requirement to take appropriate measures to monitor manufacture and distribution, to which end parties may control persons and enterprises, control establishments and premises under licence, require permits for manufacture or distribution of substances in Tables I and II and prevent accumulation of such substances (para. 8);

(d) Obligation to monitor international trade in order to identify suspicious transactions, to provide for seizures, to notify the authorities of the parties concerned in case of suspicious transactions, to require proper labelling and documentation and to ensure maintenance of such documents for at least two years (para. 9);

(e) Mechanism for advance notice of exports of substances in Table I, upon request (para. 10);

(f) Confidentiality of information (para. 11);

(g) Reporting by parties to the International Narcotics Control Board (para. 12);

(h) Report of the Board to the Commission on Narcotic Drugs (para. 13);

(i) Non-applicability of the provisions of article 12 to certain preparations (para. 14).

Annex XI

Regional groupings

Reference is made throughout the present report to various geographical regions, which are defined as follows:

Africa: Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Chad, Comoros, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Djibouti, Egypt, Equatorial Guinea, Eritrea, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, South Sudan, Sudan, Togo, Tunisia, Uganda, United Republic of Tanzania, Zambia and Zimbabwe;

Central America and the Caribbean: Antigua and Barbuda, Bahamas, Barbados, Belize, Costa Rica, Cuba, Dominica, Dominican Republic, El Salvador, Grenada, Guatemala, Haiti, Honduras, Jamaica, Nicaragua, Panama, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago;

North America: Canada, Mexico and United States of America;

South America: Argentina, Bolivia (Plurinational State of), Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay and Venezuela (Bolivarian Republic of);

East and South-East Asia: Brunei Darussalam, Cambodia, China, Democratic People's Republic of Korea, Indonesia, Japan, Lao People's Democratic Republic, Malaysia, Mongolia, Myanmar, Philippines, Republic of Korea, Singapore, Thailand, Timor-Leste and Viet Nam;

South Asia: Bangladesh, Bhutan, India, Maldives, Nepal and Sri Lanka;

West Asia: Afghanistan, Armenia, Azerbaijan, Bahrain, Georgia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kazakhstan, Kuwait, Kyrgyzstan, Lebanon, Oman, Pakistan, Qatar, Saudi Arabia, State of Palestine, Syrian Arab Republic, Tajikistan, Türkiye,[a] Turkmenistan, United Arab Emirates, Uzbekistan and Yemen;

Europe:

Eastern Europe: Belarus, Republic of Moldova, Russian Federation and Ukraine;

South-Eastern Europe: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Montenegro, North Macedonia, Romania and Serbia;

Western and Central Europe: Andorra, Austria, Belgium, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Holy See, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, Netherlands, Norway, Poland, Portugal, San Marino, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom of Great Britain and Northern Ireland;

Oceania: Australia, Cook Islands, Fiji, Kiribati, Marshall Islands, Micronesia (Federated States of), Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu.

[a] Since 31 May 2022, "Türkiye" has replaced "Turkey" as the short name used in the United Nations.

About the International Narcotics Control Board

The International Narcotics Control Board (INCB) is an independent and quasi-judicial control organ, established by treaty, for monitoring the implementation of the international drug control treaties. It had predecessors under the former drug control treaties as far back as the time of the League of Nations.

Composition

INCB consists of 13 members who are elected by the Economic and Social Council and who serve in their personal capacity, not as government representatives. Three members with medical, pharmacological or pharmaceutical experience are elected from a list of persons nominated by the World Health Organization (WHO) and 10 members are elected from a list of persons nominated by Governments. Members of the Board are persons who, by their competence, impartiality and disinterestedness, command general confidence. The Council, in consultation with INCB, makes all arrangements necessary to ensure the full technical independence of the Board in carrying out its functions. INCB has a secretariat that assists it in the exercise of its treaty-related functions. The INCB secretariat is an administrative entity of the United Nations Office on Drugs and Crime, but it reports solely to the Board on matters of substance. INCB closely collaborates with the Office in the framework of arrangements approved by the Council in its resolution 1991/48. INCB also cooperates with other international bodies concerned with drug control, including not only the Council and its Commission on Narcotic Drugs, but also the relevant specialized agencies of the United Nations, particularly WHO. It also cooperates with bodies outside the United Nations system, especially the International Criminal Police Organization (INTERPOL) and the World Customs Organization.

Functions

The functions of INCB are laid down in the following treaties: Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol; Convention on Psychotropic Substances of 1971; and United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988. Broadly speaking, INCB deals with the following:

(a) As regards the licit manufacture of, trade in and use of drugs, INCB endeavours, in cooperation with Governments, to ensure that adequate supplies of drugs are available for medical and scientific uses and that the diversion of drugs from licit sources to illicit channels does not occur. INCB also monitors Governments' control over chemicals used in the illicit manufacture of drugs and assists them in preventing the diversion of those chemicals into the illicit traffic;

(b) As regards the illicit manufacture of, trafficking in and use of drugs, INCB identifies weaknesses in national and international control systems and contributes to correcting such situations. INCB is also responsible for assessing chemicals used in the illicit manufacture of drugs, in order to determine whether they should be placed under international control.

In the discharge of its responsibilities, INCB:

(a) Administers a system of estimates for narcotic drugs and a voluntary assessment system for psychotropic substances and monitors licit activities involving drugs through a statistical returns system, with a view to assisting Governments in achieving, inter alia, a balance between supply and demand;

(b) Monitors and promotes measures taken by Governments to prevent the diversion of substances frequently used in the illicit manufacture of narcotic drugs and psychotropic substances and assesses such substances to determine whether there is a need for changes in the scope of control of Tables I and II of the 1988 Convention;

(c) Analyses information provided by Governments, United Nations bodies, specialized agencies or other competent international organizations, with a view to ensuring that the provisions of the international drug control treaties are adequately carried out by Governments, and recommends remedial measures;

(d) Maintains a permanent dialogue with Governments to assist them in complying with their obligations under the international drug control treaties and, to that end, recommends, where appropriate, technical or financial assistance to be provided.

INCB is called upon to ask for explanations in the event of apparent violations of the treaties, to propose appropriate remedial measures to Governments that are not fully applying the provisions of the treaties or are encountering difficulties in applying them and, where necessary, to assist Governments in overcoming such difficulties. If, however, INCB notes that the measures necessary to remedy a serious

situation have not been taken, it may call the matter to the attention of the parties concerned, the Commission on Narcotic Drugs and the Economic and Social Council. As a last resort, the treaties empower INCB to recommend to parties that they stop importing drugs from a defaulting country, exporting drugs to it or both. In all cases, INCB acts in close cooperation with Governments.

INCB assists national administrations in meeting their obligations under the conventions. To that end, it proposes and participates in regional training seminars and programmes for drug control administrators.

Reports

The international drug control treaties require INCB to prepare an annual report on its work. The annual report contains an analysis of the drug control situation worldwide so that Governments are kept aware of existing and potential situations that may endanger the objectives of the international drug control treaties. INCB draws the attention of Governments to gaps and weaknesses in national control and in treaty compliance; it also makes suggestions and recommendations for improvements at both the national and international levels. The annual report is based on information provided by Governments to INCB, United Nations entities and other organizations. It also uses information provided through other international organizations, such as INTERPOL and the World Customs Organization, as well as regional organizations.

The annual report of INCB is supplemented by detailed technical reports. They contain data on the licit movement of narcotic drugs and psychotropic substances required for medical and scientific purposes, together with an analysis of those data by INCB. Those data are required for the proper functioning of the system of control over the licit movement of narcotic drugs and psychotropic substances, including preventing their diversion to illicit channels. Moreover, under the provisions of article 12 of the 1988 Convention, INCB reports annually to the Commission on Narcotic Drugs on the implementation of that article. That report, which gives an account of the results of the monitoring of precursors and of the chemicals frequently used in the illicit manufacture of narcotic drugs and psychotropic substances, is also published as a supplement to the annual report.

INTERNATIONAL NARCOTICS CONTROL BOARD

The International Narcotics Control Board (INCB) is the independent monitoring body for the implementation of United Nations international drug control conventions. It was established in 1968 in accordance with the Single Convention on Narcotic Drugs, 1961. It had predecessors under the former drug control treaties as far back as the time of the League of Nations.

Based on its activities, INCB publishes an annual report that is submitted to the United Nations Economic and Social Council through the Commission on Narcotic Drugs. The report provides a comprehensive survey of the drug control situation in various parts of the world. As an impartial body, INCB tries to identify and predict dangerous trends and suggests necessary measures to be taken.

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