

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

73. The present chapter is based primarily on data provided by Governments on form D. Other sources of information include the PEN Online system, Project Prism, Project Cohesion, PICS, and national reports and other official information from Governments. The analysis covers the period up to 1 November 2019. **INCB would like to remind Governments that comprehensive and timely information on seizures of**

substances and on shipments of substances that have been stopped on the basis of sufficient evidence that the substances may have been diverted into illicit channels, is essential to addressing emerging trafficking trends at an early stage and globally. INCB also wishes to remind Governments that thwarted attempts to divert a given substance should receive the same investigative attention that would be afforded to a seizure of the same substance, since such cases provide valuable intelligence that, if shared internationally, could prevent attempts to divert the substances from other sources.

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

1. Substances used in the illicit manufacture of amphetamines

(a) Ephedrine and pseudoephedrine

74. Ephedrine and pseudoephedrine are used in the illicit manufacture of methamphetamine. They are also both used legitimately for medical purposes and are therefore among the most frequently and widely traded substances included in Table I of the 1988 Convention, in the form of both raw material and pharmaceutical preparations. P-2-P, phenylacetic acid, APAAN and a number of non-scheduled substances (see also subsects. (c) and (d) below, and annex VIII) may be used as substitutes for ephedrine and pseudoephedrine in the illicit manufacture of methamphetamine.

Licit trade

75. Between 1 November 2018 and 1 November 2019, Governments sent more than 5,100 pre-export notifications for planned shipments of ephedrine and pseudoephedrine through the PEN Online system. The shipments consisted of approximately 1,500 tons of pseudoephedrine and 120 tons of ephedrine. The shipments originated in 39 exporting countries and territories and were destined for 178 importing countries and territories. The table below presents the 10 largest importers and exporters of ephedrines, ranked in terms of volume notified through the PEN Online system, in the period 2016–2018.

Table. The 10 largest importers and exporters of ephedrine, by volume, 2016–2018

Ranking	Importers	Exporters
1	United States	India
2	Switzerland	Germany
3	Republic of Korea	Switzerland
4	Egypt	China
5	France	Singapore
6	Turkey	France
7	Pakistan	United States
8	Singapore	United Kingdom
9	Indonesia	Jordan
10	Jordan	Belgium

76. Re-exports constitute a significant proportion of legitimate trade in ephedrine and there are a number of countries that are major traders in the substances. This makes licit trade monitoring more complex and requires that the authorities of both exporting and importing country take full responsibility for making sure that each transaction is legitimate and meets the uses and needs of the importing country.

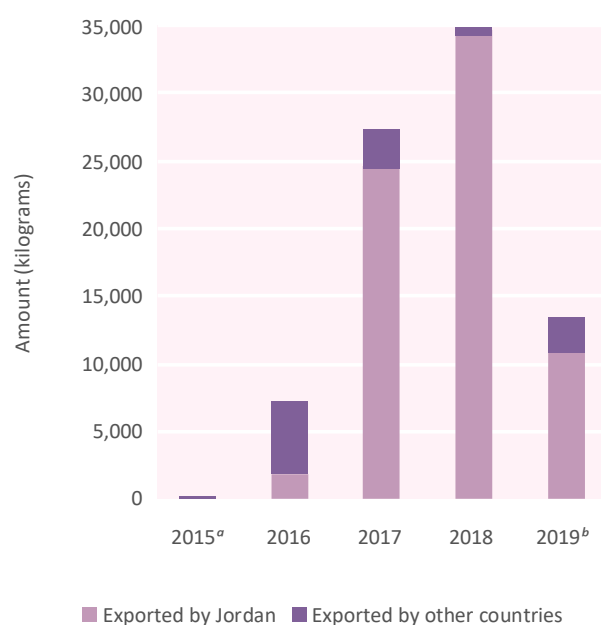
77. An important tool to help put licit trade into context are the estimated annual legitimate requirements for ephedrine, which INCB compiles and makes available on its website, pursuant to Commission on Narcotic Drugs resolution 49/3 (see also chap. II, sect. F and annex V). Major increases in annual legitimate requirements and/or in actual imports are important signals for intervention by the authorities of exporting countries and the Board.

78. Over the past several years, following bans on the issuance of import authorizations for pseudoephedrine in the Syrian Arab Republic,¹³ imports of the substance by several countries in Central and West Asia have increased significantly. These include Iraq (Kurdistan region), Kyrgyzstan and the United Arab Emirates.

79. In the past, the Board has alerted the Government of Jordan to the unprecedented pattern of imports of pseudoephedrine and subsequent exports of preparations containing that substance to the Kurdistan region of Iraq. Although proposed exports of those preparations

¹³In 2019, the Government of the Syrian Arab Republic again extended the moratorium on the approval of pseudoephedrine imports, until the end of 2019. As in the past, INCB has disseminated information about the moratorium to competent national authorities worldwide.

from Jordan declined significantly in the first 10 months of 2019 (see figure III), the Board is concerned that companies in other countries may now be targeted by traffickers as potential sources of those substances. For example, at the time of writing, INCB was in the process of following up on a single proposed shipment of more than 36 million tablets containing pseudoephedrine (2 tons) from the United Arab Emirates to the Kurdistan region of Iraq. As in the past, the competent authority of Iraq objected to all proposed exports destined for the Kurdistan region of the country that were notified through the PEN Online system.

Figure III. Preparations containing pseudoephedrine notified through the PEN Online system for export to Iraq, 2015–2019

^aNo data available for Jordan.

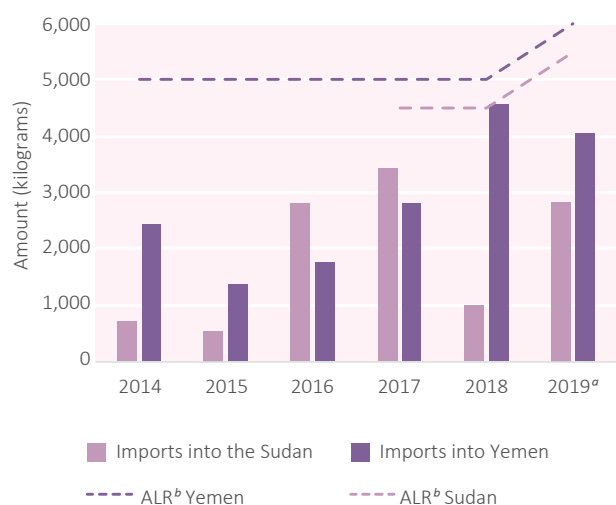
^bData only cover the first 10 months of 2019.

80. Other countries for which INCB has noted increases in proposed shipments of pseudoephedrine notified through the PEN Online system include the Sudan and Yemen (see figure IV). **INCB encourages the authorities of exporting countries to be vigilant about pseudoephedrine shipments to those countries, within the limits of their responsibility, and to ensure that the pseudoephedrine supply remains adequate while preventing its diversion into illicit channels.** In 2019, the estimated annual legitimate requirements for imports of pseudoephedrine (both raw material and in the form of pharmaceutical preparations combined) amounted to 5.5 tons for the Sudan and 6 tons for Yemen.

Box 1. Risk factors for diversion

INCB has previously expressed concern about the risk that traffickers might exploit the lack of effective government control of certain territories in order to divert precursors. However, conflict and limited government control are not the only risk factors for diversion. At the national level, competing incentives and interests between different national authorities, excessive levels of bureaucracy and inadequate capacity to enforce existing legislation also present significant risks to effective precursor control. In addition, a major loophole in monitoring international trade in ephedrines remains the lack of systematic control of pharmaceutical preparations containing those substances. The Board has observed that competent national authorities, in the absence of clear national regulations, sometimes face difficulties objecting to exports even when those exports are suspicious. The Board has also observed several instances of imports of raw materials for the manufacture of pharmaceutical preparations that were subsequently exported without the necessary scrutiny, often to countries with limited regulatory oversight. In some cases, the countries importing the raw material for processing into preparations increased their estimated requirements for the sole purpose of meeting the demand of an alleged new export market. **INCB once again urges all Governments to make every effort to address loopholes of this kind in international precursor control efforts.**

Figure IV. Imports of pseudoephedrine into the Sudan and Yemen notified by exporting countries through the PEN Online system, 2014–2019



^aData only cover the first 10 months of 2019.

^bALR = Estimated annual legitimate requirements.

Trafficking

81. The use of ephedrines in the illicit manufacture of methamphetamine is predominant in Asia and Oceania, Africa and some regions in Europe. In North America, the bulk of illicitly manufactured methamphetamine is made using P-2-P-based methods.

82. Seizure reports for 2018 continued to substantiate the global spread of illicit methamphetamine manufacture. In 2018, seizures of almost 40 tons of ephedrine and

pseudoephedrine were reported to INCB by 35 countries and territories in all regions. Nevertheless, reported seizures of precursors continued to fall short of explaining the amount of end products seized.

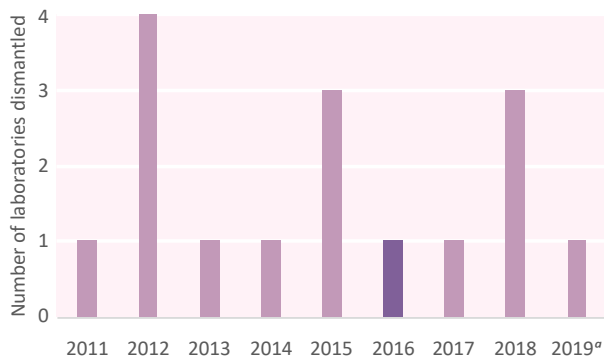
Africa

83. On form D for 2018, four Governments in Africa reported seizures of ephedrine or pseudoephedrine, of which two were in West Africa. Specifically, these were Nigeria, which reported 16 seizures of ephedrine, totalling almost 330 kg, and Benin, where a negligible amount of pseudoephedrine preparations was seized. However, from other sources, the Board is aware of seizures of ephedrine in Ghana in 2018, as well as the suspected diversion of ephedrine from Ghanaian companies and its smuggling into Nigeria, a development that is believed to have started in 2017.

84. Illicit methamphetamine manufacture has been encountered in the West African subregion since 2011, when the first operational laboratories were dismantled in Nigeria. Since then, a total of 16 illicit methamphetamine laboratories have been uncovered in different parts of Nigeria (see figure V). With the exception of one laboratory dismantled in 2016 in which P-2-P was manufactured from non-scheduled, off-the-shelf chemicals by means of the so-called nitrostyrene method,¹⁴ illicit manufacture in all other laboratories has employed ephedrine-based methods.

¹⁴E/INCB/2016/4, para. 67.

Figure V. Methamphetamine laboratories dismantled in Nigeria, 2011–2019



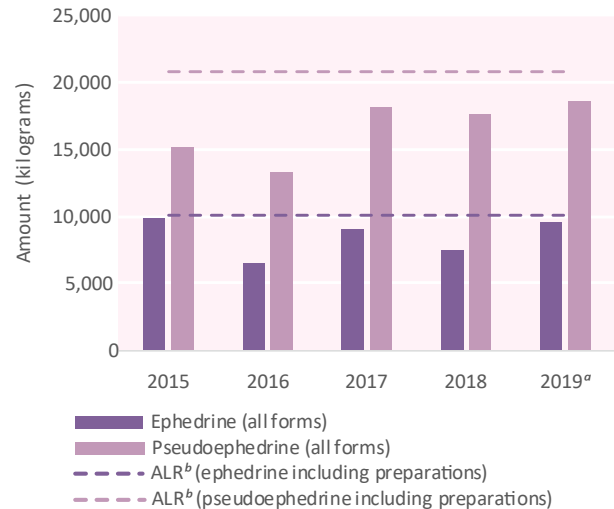
^aData only cover the first 10 months of 2019.

85. The *modi operandi* for obtaining ephedrine for illicit purposes mostly involved diversion after importation, i.e., within the countries concerned in West Africa. As the Board has previously noted, under increased scrutiny related to imports of ephedrine into Nigeria, traffickers appear to have exploited neighbouring countries to divert the substance from domestic distribution channels after it was cleared for importation, subsequently smuggling it into Nigeria.¹⁵

86. In 2019, the follow-up on a controlled delivery and seizure of 100 kg of ephedrine smuggled from Ghana, via Togo and Benin, led to the latest discovery of an illicit methamphetamine laboratory in Nigeria, in March 2019. The chemicals and equipment recovered from the illicit lab had been procured on the licit market.

87. An analysis of data from the PEN Online system for the past five years shows that the volume of proposed imports of both ephedrine and pseudoephedrine into Nigeria was already higher in the first ten months of 2019 than in the previous entire years (see figure VI). INCB is aware that the Government of Nigeria, with assistance from UNODC, is in the process of assessing the country's needs for certain medications, including ephedrines. However, to date, the annual legitimate requirements for ephedrine and pseudoephedrine have not been revised.

Figure VI. Proposed imports of ephedrines into Nigeria and corresponding estimated annual legitimate requirements, 2015–2019



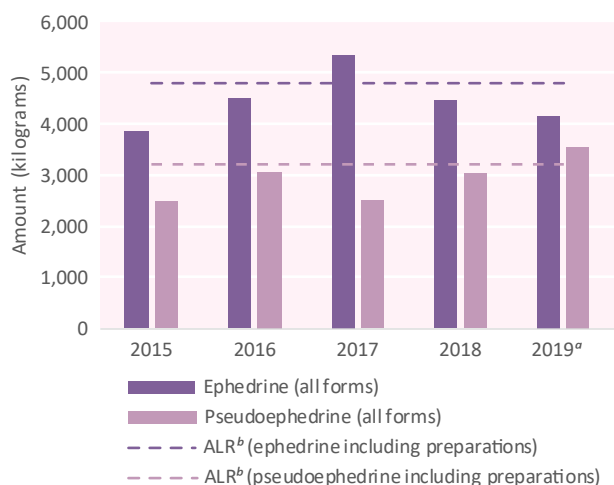
^aData only cover the first 10 months of 2019.

^bEstimated annual legitimate requirements.

88. The Board also notes that Nigeria, with an annual legitimate requirement for ephedrines of almost 31 tons, ranked among the 20 countries with the highest annual legitimate requirements for those substances (the combined annual legitimate requirements for raw materials and preparations). Ghana, with an annual legitimate requirement of 8 tons, ranked 32nd, and both countries' annual legitimate requirements were well above the global median of 1.1 tons (see annex V for annual legitimate requirements globally). Countries in Africa with estimated annual legitimate requirements equal to or greater than the median also included, in descending order, Egypt, Algeria, South Africa, Uganda, Kenya, the Sudan, the United Republic of Tanzania, Tunisia, Morocco, South Sudan, the Democratic Republic of the Congo and Ethiopia. Mali is the only country in Africa that has prohibited the import of ephedrines, a measure implemented by Mexico, and by many countries in Central America, after that region was targeted by traffickers for large-scale diversions of ephedrines (see also para. 97)

¹⁵E/INCB/2018/4, para. 94.

Figure VII. Proposed imports of ephedrines into Ghana and corresponding estimated annual legitimate requirements, 2015–2019



^aData only cover the first 10 months of 2019.

^bEstimated annual legitimate requirements.

89. Against this background, and considering that the most recent diversions in countries of West Africa occurred after imports had been cleared by the importing countries' authorities, i.e., within the importing country, **the Board recommends increased scrutiny of the specific end uses of and actual needs for ephedrines, whether as raw material or in the form of pharmaceutical preparations, for final consumption, export or re-export.**

90. Moreover, in 2018, an incident of domestic diversion was reported in the United Republic of Tanzania. It involved 8 kg of pseudoephedrine that was diverted from the manufacture of cough syrup. A total of 10,000 litres of syrup containing less of the active ingredient were also seized. Investigations are ongoing.

91. Nigeria continued to be a source for ephedrine smuggled abroad, mostly to Mozambique and South Africa, although Cameroon and the United Republic of Tanzania were also destination countries.

92. Mozambique reported seizures of 62 kg of ephedrine, smuggled from India. The Board is also aware of ephedrine smuggling using falsified labels from a manufacturer in India. Such incidents were encountered in Egypt, the Syrian Arab Republic and Turkey. Although the falsification of the labels was proved, the source or sources of the smuggled ephedrine were still unknown at the time of writing.

93. South Africa remained a destination for small-scale ephedrine shipments (up to 15 kg in an individual consignment). Smuggling was reported to have occurred by air, using couriers or postal services, from a number of countries, including Ethiopia, Germany, India, Nigeria and the United Republic of Tanzania; the United Arab Emirates is mentioned as transit country for smuggling from India.

94. Incidents of smuggling of ephedrines involving countries in Africa and amounts of up to 200 kg also continued in 2019.

South America and Central America and the Caribbean

95. In 2018, two countries in South America reported seizures of ephedrine or pseudoephedrine. No seizures of ephedrines were reported in 2018 by any country in Central America and the Caribbean.

96. Argentina reported a seizure of 160 kg of ephedrine. The amount was seized in a single incident and is related to diversions in 2006 and 2007. INCB is aware of a similar incident in Argentina in 2016, when 250 kg of ephedrine were seized.¹⁶ That amount was imported in 2011 but never collected by the importer. Both incidents appear to be linked with large-scale precursor diversions in Argentina that were already the subject of investigations some 10–12 years ago.¹⁷ Argentina had subsequently scrutinized the verification of importing companies and the legitimacy of the end use of the substance, and as a result, subsequently reorganized its control system.

97. Also approximately 10–12 years ago, in addition to Argentina, several other countries in Central and South America were targeted by organized criminal groups for the purposes of acquiring ephedrines and subsequently smuggling them from the domestic markets of those countries into North America. The smuggling was revealed during the INCB-led Operation Ice Block and involved Guatemala, Honduras and Nicaragua. In response to the diversions, and following the ban by Mexico on imports of ephedrines in 2009, several countries in Central America strengthened their laws related to ephedrine and pseudoephedrine. According to open source information, in August 2019, related to those past diversion incidents, a New York federal court sentenced a former Honduran drug trafficker to life in prison for distributing, among other substances, 20 tons of ephedrine.

¹⁶E/INCB/2017/4, para. 100.

¹⁷E/INCB/2008/4, para. 49.

North America

98. In 2018, the situation in North America remained unchanged compared with previous years, with only small amounts of ephedrines and their preparations having been seized. The United States reported seizures totalling 1.5 kg of ephedrine and 28 kg of pseudoephedrine, partly in the form of single dosage units. These key precursors, as well as essential chemicals such as hydriodic acid, iodine, red phosphorous and lithium metal, are often diverted from legitimate markets to feed the more than 1,500 user-based clandestine methamphetamine laboratories in the country. A continuing trend has been the smuggling of methamphetamine in liquid form into the United States, which is subsequently recovered (crystallized) using a common solvent, such as acetone.

99. In May 2019, Canada seized a record amount of 700 kg of ephedrine tablets in a multi-drug seizure. Investigations are ongoing.

East and South-East Asia

100. The illicit manufacture of methamphetamine in East and South-East Asia has traditionally been ephedrines-based, but with subregional specificities. Although a method known as the Emde method, which uses thionyl chloride, and chloroephedrines as chemical intermediates, has been predominant in South-East Asia, traffickers in East Asia more typically rely on a method known as the Nagai method, which requires red phosphorous and iodine or any of their substitutes (see also paras. 150–151). More recently, experts and some limited forensic studies have identified the use of P-2-P-based methods in the illicit manufacture of methamphetamine. Nevertheless, and despite a significantly increased focus on enhancing precursor control in recent years, in particular in South-East Asia, details about the precursors identified in the region remain scarce or have not been reported to INCB, limiting the ability of the Board and of countries that are claimed to be the origin of chemicals to address any existing weaknesses.

101. In 2018, six countries and territories in East and South-East Asia reported seizures of ephedrines. Following two consecutive years of reporting seizures of between 1 and 4 tons of preparations containing pseudoephedrine, Thailand did not provide any seizure data for substances listed in Tables I and II of the 1988 Convention in 2018.

102. China seized almost 20 tons of ephedrine raw material and 6 tons of preparations, in addition to 908 kg of pseudoephedrine. Unfortunately, no further information was provided. However, the Board assumes that, as in previous years, the bulk of the ephedrine was illicitly

manufactured (see para. 149). The authorities of China also noted a shift in illicit drug manufacturing activities to other places with weaker controls both within China and abroad. Within China, 268 clandestine laboratories were dismantled in 2018, approximately 15 per cent fewer than in 2017. This was due in particular to a major decline in Guangdong province, one of the provinces most heavily affected by illicit manufacture in the past.

103. The second largest seizures of ephedrines reported by a country in East and South-East Asia in 2018 were reported by the Philippines. They totalled more than 11 tons of ephedrine, the largest amount ever reported by that country. No further details were provided; the origin was unknown.

104. Seizures of ephedrine in Malaysia amounted to nearly 200 kg. The substance was seized in illicit methamphetamine laboratories and was suspected to have been diverted domestically. Myanmar reported seizures of almost 140 kg of ephedrine preparations, suspected to have originated in China, and 7.6 kg of pseudoephedrine preparations, from India. The amounts fell short of the suspected manufacturing capacity of methamphetamine laboratories dismantled in Myanmar in 2018.

105. Hong Kong, China, reported the seizure of approximately 11 kg of ephedrine in two outbound ephedrine consignments pending export to the United Kingdom of Great Britain and Northern Ireland. Both cases occurred in 2017 but were only confirmed in 2018 and involved the trans-shipment of misdeclared express mail packages, a modus operandi also encountered in New Zealand.

106. The Board now understands from forensic impurity profiling studies in China of seized methamphetamine smuggled from the Golden Triangle in the second half of 2018 that the proportion of methamphetamine that was manufactured using P-2-P-based methods increased to approximately 20 to 30 per cent (from an estimated 10 per cent previously). Profiling data further suggest that benzyl cyanide (also known as phenylacetone), a chemical not included in Table I or Table II of the 1988 Convention but included in the limited international special surveillance list, might be used as starting material to synthesize P-2-P (see also para. 146). According to the profiling results, the remaining 70 to 80 per cent of methamphetamine is manufactured from ephedrine using the Emde method. Most of the ephedrine is synthesized illicitly from 2-bromopropiophenone or its precursors and pre-precursors (see para. 149).

107. Given the continued scarcity of information from, and the Board's difficulties communicating with several countries in, East and South-East Asia, **INCB once again**

urges the Governments in the region to cooperate with each other and with the Board with a view to identifying the types of precursors, their points of diversion and the modi operandi used by traffickers, as well as to addressing their diversion, investigating precursor-related incidents and allowing criminal activities to be prosecuted. INCB also once again calls on the United Nations Office on Drugs and Crime to support countries in the region in fulfilling their obligations under the 1988 Convention and in preventing and investigating precursor-related cases, including by enhancing the capacity for the field detection and identification of emerging precursors.

West Asia

108. In 2018, two countries in West Asia, Afghanistan and Georgia, reported seizures of ephedrine. Overall, the amounts seized, and the information provided to INCB remained insufficient for a meaningful assessment of the situation with regard to methamphetamine precursors in West Asia. At the same time, the estimated annual legitimate requirements for ephedrine in several countries in the subregion remained comparatively high. Pakistan, the Syrian Arab Republic, Jordan, Saudi Arabia, Turkey and Iraq, in that order, ranked among the 20 countries with the highest annual legitimate requirements for ephedrine (combined annual legitimate requirements for raw materials and preparations containing ephedrine); Pakistan ranked among the 10 countries with the highest such requirements.

109. A development of concern is the rise in illicit methamphetamine manufacture in Afghanistan, to which the Board has drawn attention since 2015.¹⁸ Initially, ephedrine from pharmaceutical preparations, including in the form of syrup, were believed to have fuelled illicit manufacture. In 2018, INCB became aware of seizures of the *Ephedra* plant, which grows wild in the mountains of Afghanistan. Although it is a new development of concern in Afghanistan, the use of wild grown ephedra in illicit methamphetamine manufacture is not a new phenomenon and has been observed in the past, for example, in countries in Central Asia. Given the conducive growing conditions in the mountainous areas of Afghanistan, it is becoming increasingly important to understand the extent of the availability of ephedra in the country, how it reaches illicit methamphetamine laboratories, and which other key chemicals and equipment are used, and their sources, so as to quickly develop strategies to disrupt at an early stage the supply from what appears to be a new, growing illicit drug industry in Afghanistan.

110. Afghan authorities did not report any ephedra seizures on form D for 2018. Seizures of pseudoephedrine were comparatively small (50 kg), with an alleged origin in the Islamic Republic of Iran.

South Asia

111. Seizures of ephedrine in India in 2018 totalled more than 330 kg. Through PICS, INCB is aware of the amounts seized in individual seizures, which ranged from 20 grams to more than 120 kg, and from 1,000 to 1.12 million tablets, but which were typically small (less than 15 kg). The seized substance typically originated in India and was destined for countries in Africa (Ethiopia, Malawi, Nigeria, South Africa, United Republic of Tanzania, Zambia and Zimbabwe), East and South-East Asia (Malaysia) and West Asia (Oman and Saudi Arabia). One seizure of 123 kg originated in Myanmar. Seizures communicated through PICS in 2019 followed the same pattern with regard to the amounts seized and the destination countries, with the exception of Australia and the Congo, which were new destination countries in 2019. Follow-up investigations into interception of 25 kg of pseudoephedrine at an airport resulted in the seizure of more than 1.8 tons of the substance and of an illicit laboratory.

Europe

112. In 2018, 18 countries in Europe reported seizures of ephedrine, totalling approximately 180 kg of ephedrine and 270 kg of pseudoephedrine. This represented a significant increase from 2017, although from low levels. Between 60 and 70 per cent of the amounts seized was in the form of preparations. The increase may be due to two developments: (a) the use of European countries as transshipment points to disguise the origin of ephedrine from Asia destined for Africa and Oceania; and (b) an increase in illicit methamphetamine manufacture in Europe. Although such manufacture in the past was largely confined to small-scale, user-based laboratories in Czechia and countries bordering Czechia, there are now concerns among authorities about the growing indications of organized criminal groups' interest in illicit methamphetamine manufacture in Europe more widely.

113. In recent years, the authorities of Czechia have observed an increase in large, industrial-scale laboratories, typically run by organized criminal groups, to meet demand abroad. In addition, in 2018, there was at least one laboratory that focused purely on extracting pseudoephedrine from tablets. The authorities of Czechia also noted a shift of larger-scale laboratories to other countries, namely to Poland, Germany or the Netherlands, as well as a trend towards each facility being used for one or two cycles only.

¹⁸E/INCB/2015/4, para. 73.

Access to chemicals, the avoidance of detection and differing levels of punishment are suspected driving factors for this development.

114. Polish authorities have confirmed this development, having observed a significant increase in dismantled methamphetamine manufacturing sites in recent years. Whereas before 2015, a maximum of three methamphetamine laboratories had been dismantled in Poland annually, five such laboratories were dismantled in 2016, nine in 2017 and seven in 2018.

115. In 2019, authorities in Belgium dismantled a fully equipped methamphetamine laboratory that contained notable amounts of chemicals, and authorities in the Netherlands dismantled a “floating” methamphetamine laboratory on board a large cargo ship, from which more than 300 litres of methamphetamine oil and drug-manufacturing equipment were also seized.

116. In terms of precursors, in 2018, nearly 60 kg of pseudoephedrine preparations, twice the amount reported in 2017, were seized in Czechia. Individual seizures involved small amounts, i.e., there were nearly 100 seizures, of which 76 (in the amount of 55 kg) involved Poland as a country of origin. Countries in South-Eastern Europe were also mentioned.

117. Authorities in Hungary seized almost 125 kg of preparations containing ephedrine, in individual amounts ranging from less than 100 grams to more than 60 kg. According to the authorities of Hungary, the modus operandi of the trafficking often involved citizens of Czechia who were paid to purchase and/or smuggle the tablets. The majority of incidents occurred at the border between Serbia and Hungary. Some of the preparations were purchased in Bulgaria and the consignments were often destined for Czechia. Some incidents involved tablets without imprints that may have been illicitly compressed solely for the purposes of smuggling and evading controls. The authorities of Hungary also reported the dismantling of one illicit methamphetamine laboratory.

118. Seizures of ephedrine in Ireland (10 kg) and the United Kingdom (12 kg) appear to have been trans-shipments destined for Australia or New Zealand. **To help determine whether there are any weaknesses in the control system for ephedrine, or whether the seized ephedrine was illicitly manufactured (requiring a different approach), the Board encourages the countries where seizures of ephedrine are made to subject the seized substance to forensic profiling analysis.**

119. On form D for 2018, Ukraine reported a number of small seizures of pseudoephedrine preparations, totalling just 3.5 kg, with the substance originating in a range of countries, including Israel (10 seizures), Turkey (5 seizures), Egypt, the Syrian Arab Republic and a number of countries in Europe. In addition, the authorities of Ukraine noted a steady flow of preparations containing pseudoephedrine in individual amounts of 5,000 to 35,000 60-mg tablets from or through European countries during 2018.

120. Through PICS, INCB is also aware of a number of incidents that occurred between October and December 2018 and in May 2019 involving the smuggling of pseudoephedrine from Egypt to Ukraine via Germany. The incidents involved pseudoephedrine raw material in individual amounts ranging from 3 kg to almost 10 kg. It is the Board’s understanding that investigations are ongoing. Similarly, in 2018 and 2019, Germany intercepted a number of ephedrine shipments in transit from India to countries in Africa (Malawi, South Africa and Zambia), and from Liberia and Nigeria to Australia and New Zealand.

Oceania

121. In 2018, the situation regarding ephedrines in Oceania remained unchanged, with limited information about seizures and diversions of those substances, and their sources. Over the last several years, ephedrine has almost entirely replaced pseudoephedrine as the main methamphetamine precursor seized in Australia and New Zealand. This trend is likely linked with the emergence of illicitly manufactured ephedrine in China, which has made the diversion of pseudoephedrine and preparations containing pseudoephedrine less lucrative.

122. According to the Australian Criminal Intelligence Commission, the number of detections of methamphetamine precursors at the Australian border decreased by nearly 40 per cent, while the weight of intercepted shipments increased by more than 200 per cent, indicating fewer but larger interceptions.¹⁹ This trend continued in 2019, when Australian authorities seized 1.3 tons of ephedrine from a container in Melbourne harbour, following a tip-off from the National Narcotics Control Commission of China. The container was labelled as containing ceramic tiles and glue. It is likely that the ephedrine was of illicit origin, an important aspect of the case that the Board is still verifying with the authorities concerned.

¹⁹Australian Criminal Intelligence Commission, *Illicit Drug Data Report 2017–2018* (Canberra, July 2019).

123. In the period 2017–2018, the majority of methamphetamine precursors detected were encountered in the international mail stream (53 per cent); by weight, sea cargo accounted for the greatest proportion of border detections (85 per cent). In terms of total weight of seized precursors, Thailand was the main embarkation point. Increases in precursor seizures indicate that the domestic manufacture of methamphetamine, as well as the importation of methamphetamine as a final product, may be on the rise. Specifically, authorities believe that large-scale clandestine laboratories may exist throughout Australia.

124. On form D for 2018, New Zealand reported seizures of 412 kg of ephedrine. This was a significant decrease from 2017, when 723 kg was seized, and represented a continued downward trend since 2016. It is unclear what has prompted this decline; however, the authorities of New Zealand suspect that it might be more cost-effective for traffickers to import methamphetamine as a finished product, rather than precursors, for use in domestic illicit manufacture. From 1 January 2019 until mid-2019, police and customs officials had seized more than 150 kg of ephedrine.

125. Since most chemicals are imported into New Zealand in bulk then repacked within the country in unmarked containers, the identification of the actual source country is often not possible. This applied to the majority of incidents, totalling 285 kg, in 2018; 9 per cent, respectively, could be traced to China, including Hong Kong, China (approximately 55 kg), and to the United Kingdom (approximately 45 kg). The routing through the United Kingdom indicates the utilization of that country as a trans-shipment point in an attempt to disguise the actual origin of the ephedrine and avoid detection through the use of established risk profiles (see also para. 118).

126. In early 2019, France communicated through PICS the dismantling of two small-scale clandestine methamphetamine operations in its overseas territory French Polynesia. Approximately 2,000 tablets of pseudoephedrine, and chemicals indicative of the manufacturing method known as the Birch method, in which anhydrous ammonia and lithium metal are used to produce methamphetamine, were seized.

(b) Norephedrine and ephedra

Licit trade

127. Between 1 November 2018 and 1 November 2019, 12 exporting countries notified through the PEN Online system a total of 210 exports of norephedrine, a substance that can be used in the illicit manufacture of amphetamine. These exports were destined for 35 importing countries

and territories and amounted to more than 27 tons of raw material and more than 10 tons of pharmaceutical preparations. Compared with the previous reporting period, imports of norephedrine (in all forms) into countries in East and South-East Asia increased by nearly 50 per cent. As in the past, small-scale trade in ephedra was only reported by Germany.

Trafficking

128. On form D for 2018, the United States was the only country to report a seizure of norephedrine, albeit in an insignificant amount (7 kg). No seizure of ephedra was formally communicated to INCB. However, in the light of the anecdotal information from Afghanistan (see para. 109), **the Board wishes to remind Governments to remain alert with regard to ephedra and other natural sources of ephedrine, and to consider adopting adequate measures to reduce the risk of their use in illicit drug manufacture.**

(c) 1-Phenyl-2-propanone, phenylacetic acid and *alpha*-phenylacetonitrile

129. Phenylacetic acid, P-2-P and APAAN are precursors of amphetamine and methamphetamine. While phenylacetic acid and P-2-P are traded legitimately, albeit with differences in the extent of their trade, APAAN is a designer precursor and trade in the substance is almost non-existent. Non-scheduled substitutes for P-2-P, pre-precursors and designer precursors used in the illicit manufacture of amphetamine and methamphetamine are discussed in subsection (d) below.

Licit trade

130. Between 1 November 2018 and 1 November 2019, there were 30 pre-export notifications involving P-2-P, from five exporting countries to eight importing countries. During the same period, there were no transactions involving APAAN, while there were approximately 650 proposed shipments of phenylacetic acid pre-notified through the PEN Online system, from 14 exporting countries to 47 importing countries and territories.

131. In January 2019, the Board inquired about a proposed import of 500 kg of P-2-P by a company in Azerbaijan. The authorities of Azerbaijan eventually stopped the import, as the importing company, which had a valid import authorization, did not respond to repeated inquiries by those authorities about the end use of the substance. The authorities of the exporting country were requested to share copies of all relevant documentation about the shipment, as well as copies of administrative

and commercial documents received from the exporting company, to enable follow-up investigations in Azerbaijan and stop any possible future attempts to import the substance to the country.

Trafficking

132. Seizure data for P-2-P often reflect only a few large seizures and can therefore fluctuate strongly year-on-year (see figure VIII). Compared with the previous year, on form D for 2018, more countries reported seizures of larger amounts of the substance. However, in most cases, no information other than the amount seized was provided. This lack of additional information limits the value of reported seizure data as a means of identifying and addressing weaknesses in precursor control, as it remains unclear whether the P-2-P was diverted from a legitimate source and if it was, where that source may have been, or whether the P-2-P was illicitly manufactured from other controlled precursors or from non-scheduled pre-precursors. Addressing the two scenarios – diversion from legitimate sources and illicit manufacture – requires very different approaches. **The Board reminds Governments that it is mandatory, pursuant to article 12, paragraph 12, of the 1988 Convention, to report information on methods of diversion and illicit manufacture.**

Figure VIII. Global seizures of P-2-P reported on form D, 2009–2018



133. Countries in which seizures of P-2-P were effected at the border often claimed China as the source. This included a number of countries in Europe, as well as Myanmar, where approximately 3,300 litres of the substance were seized from an unattended truck that was parked at the roadside of the Mandalay-Lashio highway for some time. Authorities in China reported seizures of

more than 38,000 litres of P-2-P and 6.5 tons of phenylacetic acid; no further information about the sources of the chemicals was provided.

134. Mexico seized 19,000 litres of P-2-P, the largest amount ever reported, and approximately 1.3 tons of phenylacetic acid. All of the seizures were made in clandestine methamphetamine laboratories and, in all of the seizures, both chemicals were presumed to have been illicitly manufactured. This is supported by forensic profiling analyses, which suggest that in clandestine laboratories in Mexico phenylacetic acid is now made by means of a new process that uses benzyl chloride and sodium cyanide to produce benzyl cyanide and subsequently phenylacetic acid (see para. 145).

135. In 2018, notable seizures of phenylacetic acid were also reported by Myanmar (4,000 kg, in one incident, with a presumed origin in China) and the Netherlands (132 kg, in three incidents). In 2019, through PICS, additional incidents involving P-2-P were communicated by the Netherlands (totalling nearly 2,500 litres) and the United Kingdom (totalling 64 kg). While incidents in the Netherlands almost exclusively involved illicit laboratories, suggesting that the P-2-P was illicitly manufactured, incidents in the United Kingdom involved airmail shipments from China, including Hong Kong, China.

136. On form D for 2018, seizures of APAAN were reported by eight countries. The largest amount was reported by Jordan, seized in a “captagon”²⁰ laboratory where amphetamine was synthesized from benzyl cyanide, a non-scheduled amphetamine pre-precursor.²¹ APAAN and P-2-P were seized from the laboratory as chemical intermediates in the synthesis process that started with benzyl cyanide (see para. 146). The findings illustrate that non-scheduled chemicals and trends in illicit manufacturing methods spread quickly and across regions. **Therefore, the Board urges all Governments to remain alert in regard to the possible use of non-scheduled pre-precursors in illicit drug manufacture, to keep themselves up to date and to consult available tools, such as the Board’s limited international special surveillance list of non-scheduled chemicals, and PICS.**

²⁰The term “captagon” is used to refer to the product currently available on the illicit market in countries in the Middle East. The composition of the product has nothing in common with that of Captagon, a pharmaceutical product that became available in the early 1960s and that contained fenethylline.

²¹E/INCB/2018/4, para. 109.

137. In addition to Jordan, seven countries in Europe reported seizures of APAAN on form D for 2018, several of which had previously been communicated through PICS. Notably, the two largest shipments intercepted at points of entry had originated in or transited Viet Nam. This included a seizure of 4.4 tons of APAAN in the seaport of Varna in Bulgaria and a seizure of 500 kg at Amsterdam airport in the Netherlands. A seizure of 25 kg at the seaport of Antwerp in Belgium in May 2019 could also be traced to Viet Nam. **INCB calls on the Governments concerned to cooperate with each other and the Board to determine the modi operandi used to traffic APAAN, and to prevent future shipments of the substance, which has been under international control since October 2014, from reaching illicit laboratories.**

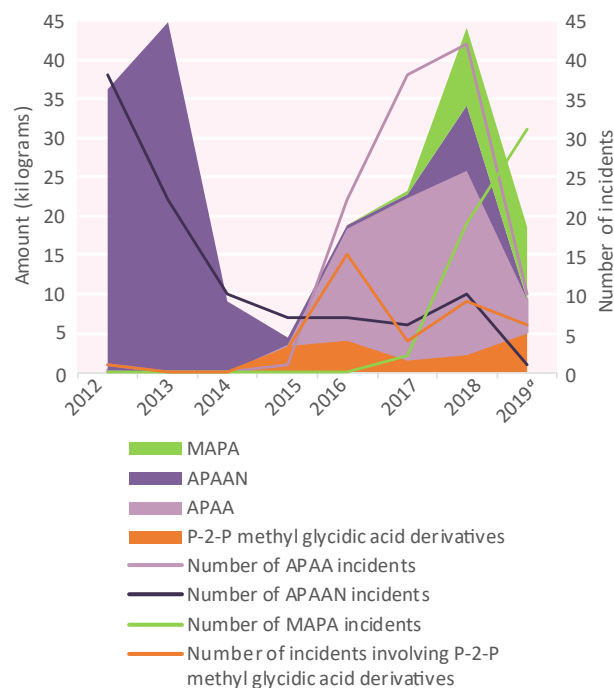
138. In March and April 2018, Germany dismantled two of the largest illicit amphetamine laboratories ever encountered, in a rural area near the border with the Netherlands. Both laboratories had produced amphetamine base using P-2-P, which itself had been illicitly manufactured from APAAN, although a large quantity of other designer precursors was also found, such as APAA, as well as designer precursors of MDMA. All labels on the drums had been removed. One of the laboratories was determined to have had a capacity of 150 to 200 litres of amphetamine base weekly and was estimated to have possibly produced more than 9 tons of amphetamine since its installation in January 2018.

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

Alpha-phenylacetoacetamide, methyl alpha-phenylacetoacetate and P-2-P methyl glycidic acid derivatives

139. **APAA, MAPA and P-2-P methyl glycidic acid derivatives** are precursors of P-2-P and pre-precursors of amphetamine and methamphetamine. They are designer precursors that emerged after APAAN was brought under international control in October 2014 (see figure IX). Effective 19 November 2019, APAA was to be included in Table I of the 1988 Convention. The Commission on Narcotic Drugs is to vote in March 2020 on the Board's recommendation to place MAPA under international control. P-2-P methyl glycidic acid derivatives have not as yet been placed under international control.

Figure IX. Incidents involving APAA, APAA, MAPA and P-2-P methyl glycidic acid derivatives communicated through the Precursors Incident Communication System, 2012–2019



*Data only cover the first 10 months of 2019.

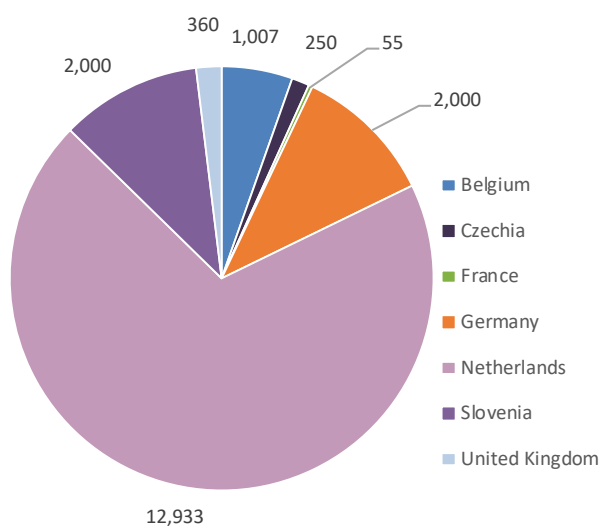
140. In 2018, as in previous years, the overwhelming majority of seizures of these three designer precursors occurred in European countries. The largest amounts were seized in the Netherlands, almost exclusively in illicit laboratories. Seizures of the three substances totalling more than 1 ton were also made in Belgium, Bulgaria, Croatia, Czechia, Denmark, Germany, Portugal and the United Kingdom, typically at airports or seaports.

141. On form D for 2018, the only seizure outside of Europe was reported by authorities in Lebanon and involved a shipment of nearly 250 kg of the sodium salt of P-2-P methyl glycidic acid from Hong Kong, China, which was intercepted at the Beirut airport. The Board is also aware of an incident involving MAPA in Australia, as well as at least one instance of the use of MAPA in a clandestine laboratory in Asia. The Canada Border Services Agency reported APAA and MAPA as being among the new substances identified in 2018.

142. In the first 10 months of 2019, almost 50 seizures of the three substances were communicated through PICS, amounting to more than 18 tons. All incidents were communicated by countries in Europe (see figure X). The single largest seizure of an inbound shipment in that period

was a seizure of 2,000 kg of MAPA at a seaport in Slovenia. However, the Netherlands communicated the largest number of seizures and the largest total amount seized. In the 16 incidents for which information about the origin of the shipments was available, China was identified as the country of origin. Reported destination countries included Belgium, Czechia, France, Germany, the Netherlands, Poland and the United Kingdom.

Figure X. Seizures of APAA, MAPA and P-2-P methyl glycidic acid derivatives communicated by countries in Europe through the Precursors Incident Communication System, in kilograms, 2019



Note: data only covers the first 10 months of 2019.

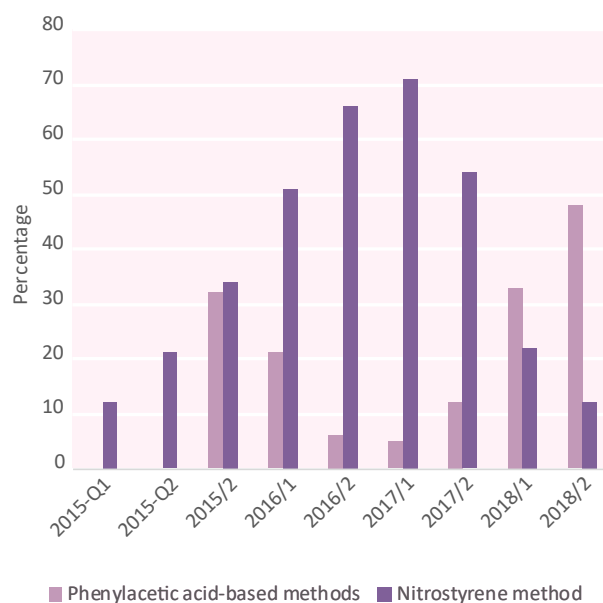
Benzaldehyde, nitroethane and 1-phenyl-2-nitropropene

143. **Benzaldehyde** and **nitroethane** are used in the so-called nitrostyrene method to manufacture P-2-P and subsequently, methamphetamine or amphetamine. **1-Phenyl-2-nitropropene** is the chemical intermediate derived from the reaction between benzaldehyde and nitroethane and may also be encountered as a starting material in illicit laboratories.

144. In 2018, the use of the nitrostyrene method, as evidenced by seizures of one or more of the above-named chemicals, was reported by countries in North America (Mexico and the United States) as having been used for the manufacture of methamphetamine, and in Europe (Estonia, Germany, Hungary, Russian Federation, and Spain), as having been used predominantly for the manufacture of amphetamine. Germany reported the detection of benzaldehyde and nitroethane in connection with the illicit manufacture of methamphetamine.

145. While use of the nitrostyrene method has dominated the illicit manufacture of methamphetamine in Mexico since 2016, the latest results of forensic profiling of methamphetamine samples of Mexican origin seized in the United States by the Special Testing and Research Laboratory of the Drug Enforcement Administration of the United States suggest that organized criminal groups in Mexico are now reverting to phenylacetic acid-based methods (see figure XI). However, unlike before, phenylacetic acid is now being illicitly manufactured from benzyl chloride and sodium cyanide, via benzyl cyanide intermediate (see para. 146).

Figure XI. Methods used in the illicit manufacture of methamphetamine, as determined by the forensic profiling of methamphetamine samples from the United States of America and Mexico, 2015–2018



Benzyl chloride, sodium cyanide and benzyl cyanide

146. Several countries reported seizures of non-scheduled chemicals that can be used in the illicit manufacture of P-2-P via APAAN or phenylacetic acid. Specifically, there were significant seizures of benzyl chloride and benzyl cyanide,²² versatile precursors of both APAAN and phenylacetic acid, and subsequently P-2-P and amphetamine or methamphetamine. Significant seizures of **benzyl cyanide** in connection with the illicit manufacture of amphetamine were reported by Jordan (9.4 tons seized in an illicit “captagon” laboratory) (see also para. 136), Germany (7 tons) and the Netherlands (more than 2 tons). Mexico seized nearly 900 kg of benzyl cyanide in four

²²Benzyl cyanide may also be referred to by its synonym phenylacetoneitrile.

methamphetamine laboratories. There is also anecdotal forensic information indicating that benzyl cyanide is being used as the starting material to produce APAAN and subsequently methamphetamine in South-East Asia. **The Board encourages all Governments, in particular Governments in East and South-East Asia, to remain alert with regard to the use of non-scheduled chemicals in the illicit manufacture of methamphetamine.**

147. Sweden reported seizures of 6 kg of **benzyl chloride**, a precursor of benzyl cyanide. No significant seizures of **sodium cyanide**, the chemical needed to convert benzyl chloride into benzyl cyanide, were reported to INCB. In the past, such seizures had come to the attention of INCB from the border area between Thailand and Myanmar, however, the actual use of the chemical in the illicit manufacture of methamphetamine in that region has not been established.

148. Countries that reported notable seizures of other P-2-P precursors not under international control in 2018 included the Netherlands, where almost 1.5 tons of **2-phenylacetamide**, a precursor of phenylacetic acid, were seized. The United Kingdom intercepted 12 kg of **ethyl phenylacetate** shipped from China. Both chemicals can be used as precursors of phenylacetic acid.

Precursors for the illicit manufacture of ephedrine and pseudoephedrine

149. China continued to report widespread illicit manufacture of ephedrines. After the key starting material, 2-bromopropiophenone, was placed under control nationally in May 2014, the authorities in China observed a shift to other non-scheduled chemicals down the synthesis path, namely 1-phenyl-1-propanone (placed under national control in 2017) or its precursors. The authorities estimated that approximately 97 per cent of the ephedrine and pseudoephedrine in China is made from or via 2-bromopropiophenone. Importantly, although the manufacturing process results in a racemic chemical intermediate and requires the separation of optical isomers, the desired, potent form of *d*-methamphetamine is obtained with an optical purity of more than 99 per cent.

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

150. Other chemicals not under international control but frequently reported on form D for 2018 were those associated with the illicit manufacture of methamphetamine using ephedrines-based methods. Reported seizures confirm the

widespread use of the Nagai method or modifications thereof, which use **iodine** and **red phosphorous**, or alternate chemicals such as **hypophosphorous acid** and **phosphorous acid**. Seizures of one or more of these chemicals were reported by countries in Africa (Nigeria), Asia (Malaysia), North America (United States), Oceania (New Zealand) and Europe (Austria, Czechia, Germany, Hungary, Netherlands, Slovakia and Spain). The number of countries in Europe reporting seizures and the notable amounts seized in some of those countries, such as the Netherlands (more than 1.5 tons of iodine, 230 kg of red phosphorous and 7,000 litres of hypophosphorous acid) and Czechia (more than 160 kg of iodine and 135 kg of red phosphorous), have provided further evidence of an increase in the illicit manufacture of methamphetamine in Europe, and suggest that such manufacture may be occurring on a substantial scale.

151. **Hydriodic acid**, which is another alternate chemical used in the Nagai method, was reported to have been seized only in small amounts in 2018, for example, in the United States, providing further support for the Board's recommendation to not place the substance under international control under the 1988 Convention. With regard to chemicals indicative of the Emde method of illicit methamphetamine manufacture, which has long been the predominant method used in South-East Asia, seizures of key chemicals, such as **thionyl chloride**, fell short of the suspected capacity for illicit methamphetamine manufacturing in that subregion. In 2018, only Myanmar reported seizures of thionyl chloride, amounting to only 16 litres.

152. Seizures of separation agents, such as **tartaric acid**, that are used to increase the potency of methamphetamine manufactured using P-2-P-based methods have been reported by Mexico regularly since 2009, coinciding with that country's ban on imports of ephedrine and the subsequent shift to the use of P-2-P-based methods in the illicit manufacture of methamphetamine. On form D for 2018, Mexico reported seizures of almost 6 tons of tartaric acid. Other countries that reported seizures of separation agents in 2018 or from which the use of such agents are known included the Netherlands (875 kg of tartaric acid) and China, in connection with the illicit manufacture of ephedrine (see para. 149).

2. Substances used in the illicit manufacture of 3,4-methylenedioxy-methamphetamine and its analogues

153. 3,4-MDP-2-P, piperonal, safrole and safrole-rich oils, and isosafrole are precursors that can be used in the illicit manufacture of MDMA and related substances (see annex VIII). Of these four substances, piperonal is the

most widely traded, while trade in 3,4-MDP-2-P and isosafrole is almost non-existent. In 2018, as in previous years, there was little evidence that these four controlled precursors were being used in the illicit manufacture of MDMA and related substances to any significant extent. In cases where 3,4-MDP-2-P was seized, it had usually been illicitly manufactured. By contrast, a number of non-scheduled substitutes for 3,4-MDP-2-P, often designer precursors without any known legitimate uses, such as derivatives of 3,4-MDP-2-P methyl glycidic acid, were reported to have been seized in notable amounts. They are discussed in paragraphs 158–159.

(a) 3,4-Methylenedioxyphenyl-2-propanone and piperonal

Licit trade

154. Between 1 November 2018 and 1 November 2019, 16 exporting countries and territories notified the authorities of 47 importing countries and territories of more than 670 proposed exports of piperonal amounting to more than 2,600 tons. There were no pre-export notifications for 3,4-MDP-2-P.

Trafficking

155. On form D for 2018, the only notable seizures of 3,4-MDP-2-P were reported by Spain (almost 530 litres) and the Netherlands (almost 190 litres, in eight incidents). Aggregate annual seizures of 3,4-MDP-2-P remained insignificant in other countries. Quantities of piperonal seized were insignificant.

(b) Safrole, safrole-rich oils and isosafrole

Licit trade

156. Between 1 November 2018 and 1 November 2019, four exporting countries sent 29 pre-export notifications through the PEN Online system for safrole and safrole-rich oils to the authorities of 15 importing countries and territories. Those notifications concerned a total volume of more than 1,400 litres, including 220 litres in the form of safrole-rich oils. There were no pre-export notifications for isosafrole.

Trafficking

157. The total global volume of seizures of safrole and safrole-rich oils reported on form D for 2018 did not exceed 200 litres. The bulk of that volume was seized in a single incident in the Netherlands, continuing a trend observed over the past several years and reflecting the

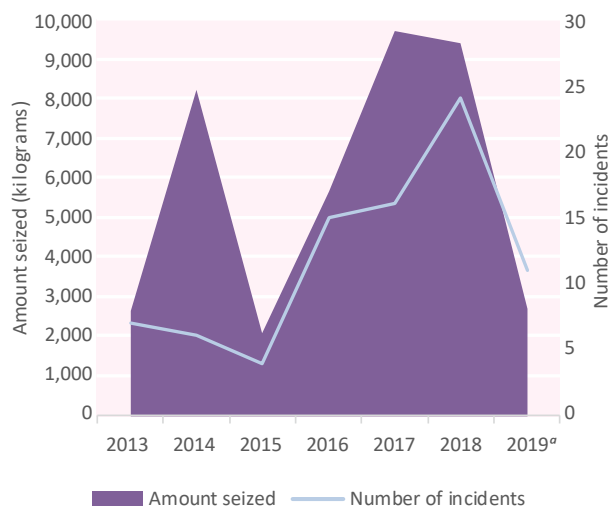
limited relevance of safrole in the illicit manufacture of MDMA, in particular in Europe. An unspecified amount of safrole, along with other chemicals and equipment, was found in the first clandestine MDMA laboratory known to have been dismantled in the Philippines. Authorities believe that the laboratory may have also been used as an experimental site for new types of amphetamine-type stimulants. No seizures of isosafrole were reported on form D for 2018, nor was any incident involving the substance communicated through PICS.

(c) Use of non-scheduled substances and other trends in the illicit manufacture of 3,4-methylenedioxy-methamphetamine and its analogues

158. Over the years, a number of substitute chemicals for 3,4-MDP-2-P and safrole have emerged, including designer precursors that are not usually available off the shelf. Of those, derivatives of 3,4-MDP-2-P methyl glycidic acid, namely, the methyl ester and the sodium salt, have been the most prevalent, especially in Europe. In March 2019, the Commission on Narcotic Drugs decided to include 3,4-MDP-2-P methyl glycidic acid and its methyl ester in Table I of the 1988 Convention. The decision was to become effective on 19 November 2019.

159. On form D for 2018, the largest seizures of 3,4-MDP-2-P substitutes were reported by the Netherlands, where more than 2.8 tons of the methyl ester, and 1.1 tons of the sodium salt, of 3,4-MDP-2-P methyl glycidic acid were seized. Portugal reported two seizures of consignments in the customs area of an international airport totalling 1.2 tons of the methyl ester. As with the majority of such consignments, they were suspected to have originated in China; one was destined for Portugal, the other for the Netherlands. Seizures of small inbound consignments of derivatives of 3,4-MDP-2-P methyl glycidic acid were also made in Belgium, Germany and the United Kingdom. Seizures of derivatives of 3,4-MDP-2-P methyl glycidic acid continued to be made in 2019 (see figure XII) and included the first reported incident in Australia. With this new development, incidents involving these substitutes have now been documented in Europe, North America, West Asia and Oceania. **The Board is aware that these chemicals are available through online vendors and trading platforms and encourages Governments to enforce any applicable regulations to prevent the misuse of the Internet for their diversion into illicit channels or, at a minimum, to use such information to generate actionable intelligence for use in further investigations.**

Figure XII. Seizures of substitutes of 3,4-MDP-2-P communicated through the Precursors Incident Communication System, 2013–2019



*Data only cover the first 10 months of 2019.

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

Methylamine and its precursors

160. Methylamine is a versatile chemical that is required in the illicit manufacture of a number of amphetamine-type stimulants (e.g., methamphetamine and MDMA) and new psychoactive substances, as well as ephedrine. Seizures of methylamine in the form of both solutions and hydrochloride salt continued to be reported.

161. On form D for 2018, notable seizures of methylamine were reported by the Netherlands (more than 11 tons), Mexico (more than 9,300 litres), and the United States (1,500 litres). Seizures in Mexico were made in clandestine methamphetamine laboratories, as in the past. In the United States, a large proportion of the amount reported (1,000 kg) was seized for having been in violation of applicable United States trans-shipment regulations. Further investigations revealed that the consignee in Canada had also had a shipment of 1,000 kg seized in 2017 for the same violation.²³

162. In 2018, notable seizures of chemicals from which methylamine can be manufactured were again reported by Mexico. Specifically, authorities seized more than 4,500 litres

of formaldehyde and more than 10.5 tons of ammonium chloride. Both chemicals were seized in clandestine methamphetamine laboratories.²⁴

Hydrogen gas

163. On form D for 2018, the Netherlands reported seizures of 2 tons of hydrogen gas, which can be used as a reducing agent in the illicit manufacture of a number of synthetic drugs. Germany also continued to report thefts of steel gas cylinders containing compressed hydrogen gas, albeit in a significantly lower number than in previous years. The hydrogen stolen in Germany in 2018 amounted to 640 litres, and was stolen from a company dealing in construction materials near the border with the Netherlands. It was presumed to have been used in the illicit manufacture of amphetamines.

Other substances not under international control

164. As in previous years, substances frequently mentioned on form D for 2018 included chemicals associated with the so-called Leuckart method, which can be used to manufacture amphetamine and methamphetamine from P-2-P, or to manufacture MDMA and related substances from 3,4-MDP-2-P. As in the past, notable amounts were seized in Europe, including in the Netherlands (9.7 tons of **formamide** and 8,700 litres of **formic acid**) and Spain (more than 8.8 tons of formamide and 1,600 litres of formic acid), and in North America, notably in Mexico (more than 4,500 litres of formamide).²⁵

165. None of the designer precursors in the form of previously identified masked derivatives of amphetamine-type stimulants were reported to have been seized in 2018. However, forensic scientists in Australia identified **para-tosyl-methamphetamine**, another chemically masked methamphetamine, in a sample from a seizure of several postal consignments originating in China in mid-2017.²⁶

166. As in previous years, in 2018, several countries reported seizures of **adulterants** used in connection with the illicit manufacture of amphetamine-type stimulants. **Caffeine** continued to be one of the most frequently and widely reported adulterants. On form D for 2018, Myanmar

²⁴Ammonium chloride is also required in the illicit manufacture of heroin (see para. 210), and part of the ammonium chloride seized in Mexico was found in illicit heroin laboratories.

²⁵Peru seized almost 3.3 tons of formic acid in 2018. Significant seizures of the chemical have been reported in Peru since 2013, reportedly in connection with illicit cocaine manufacture.

²⁶Michael Collins, Ananta Bhattarai and Helen Salouros, "Another chemically masked drug: *p*-tosyl methylamphetamine", *Drug Testing and Analysis*, vol. 10, No. 5 (May 2018), pp. 898–905.

²³E/INCB/2018/4, para. 151.

reported having seized nearly 20 tons of caffeine, in connection with the illicit manufacture of methamphetamine (“yaba”) tablets, Brazil reported having seized more than 1.6 tons of caffeine, in connection with the adulteration of cocaine, amphetamines and new psychoactive substances, Malaysia reported seizures of 320 kg of the substance, in connection with MDMA, “erimin5” and low-grade heroin, and Spain reported seizures of 121 kg of the substance. **INCB reminds Governments of the investigative value of monitoring adulterants and cutting agents in order to trace the laboratories in which drugs are illicitly manufactured. Governments may also wish to consider taking action against adulterants and cutting agents in accordance with article 13 of the 1988 Convention.**

B. Substances used in the illicit manufacture of cocaine

1. Potassium permanganate

Licit trade

167. Between 1 November 2018 and 1 November 2019, the authorities of 31 exporting countries and territories sent more than 1,500 pre-export notifications to 128 importing countries and territories relating to a total of almost 28,000 tons of potassium permanganate. The main exporter was China, accounting for approximately 20,000 tons, followed by India and the United States, accounting for more than 3,000 tons each. The main importers were countries in East and South-East Asia. Imports of the substance by the three coca-producing countries in South America – Bolivia (Plurinational State of), Colombia and Peru – continued to account for a very limited proportion of the total global amount imported (less than 1 per cent). Imports of the substance by other countries in South America amounted to approximately 3 per cent (900 tons). None of those countries exported or re-exported potassium permanganate in any significant amounts.

Trafficking

168. Potassium permanganate continued to be the principal oxidizing agent used in the illicit manufacture of cocaine, and the vast majority of seized cocaine continued to be highly oxidized.²⁷ In 2018, 17 countries and territories reported seizures of potassium permanganate totalling more than 80 tons. Bolivia (Plurinational State of), Bosnia

and Herzegovina,²⁸ Chile, China, Colombia and Venezuela (Bolivarian Republic of) each seized more than 1 ton of the substance. Seizures in countries in South America were often made in illicit cocaine laboratories. Chile also reported seizures of the substance en route to Bolivia (Plurinational State of), while in Bolivia (Plurinational State of) and Colombia, as in previous years, the amount reported seized included administrative seizures following which the substance may have been returned to the owner.

169. Colombia reported the dismantling of eight illicit laboratories involved in the manufacture of potassium permanganate in 2018. In the first six months of 2019, another four potassium permanganate laboratories were destroyed and 27 tons of the substance were seized. The available information thus provides further support for the observation that most chemicals used in the illicit processing of cocaine in South America are either diverted from legitimate domestic distribution channels or are illicitly manufactured, and therefore require national or regional responses. However, it is still unclear how much potassium permanganate originates from either source. There is also insufficient understanding of the *modi operandi* used for domestic diversion of the substance in countries in South America. **INCB therefore reiterates its call to all Governments of countries in the region to review their domestic control mechanisms for potassium permanganate and its substitutes and precursors and to devise strategies to address the situation.**

170. Small amounts of potassium permanganate were also reported seized in Europe, namely in illicit laboratories in the Netherlands and Spain, where cocaine was recovered and refined after smuggling. Such laboratories continued to be dismantled in 2019.

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

171. In 2018, as in previous years, countries in South America reported seizures of a number of chemicals that are known for their potential use in connection with illicit cocaine processing and that are under national control in those countries. The majority of those chemicals were reported to have been diverted from domestic distribution channels. However, INCB notes that a significant proportion of the seizures were made for administrative reasons and in response to violations of transport regulations. **The Board encourages the Governments**

²⁷ According to recent results from the Cocaine Signature Program of the United States Drug Enforcement Administration Special Testing and Research Laboratory, 100 per cent of the cocaine samples examined, from 2018 seizures in the United States, were highly oxidized or reoxidized.

²⁸ The circumstances of the seizures were not provided; the substance allegedly originated in Slovenia.

concerned to assess the proportions of seizures that were made on the basis of suspected illicit use and those made purely for administrative reasons, with a view to assessing the effectiveness of relevant control measures, enhancing the impact of such measures on illicit manufacture and limiting the burden on law enforcement and regulatory authorities while still preventing the use of such chemicals for illicit purposes.

Precursors of and substitutes for potassium permanganate

172. On form D for 2018, notable seizures of precursors of potassium permanganate were only reported by Colombia. Specifically, in eight incidents, more than 6.8 tons of **potassium manganate**, an immediate precursor of potassium permanganate, were seized, an increase from 1.9 tons in 2017. No seizures of **manganese dioxide** (pyrolusite), a precursor of potassium manganate, were reported in 2018.

173. The Netherlands reported seizures of 25 kg of potassium manganate and 15 kg of **sodium permanganate**, a direct substitute for potassium permanganate.

174. Notable seizures of **sodium hypochlorite**, another possible substitute for potassium permanganate, were reported by Peru (almost 14 tons in 8 incidents), Bolivia (Plurinational State of) (4,300 litres in 4 incidents), and Argentina (3,700 litres in 51 incidents), although some of those seizures were made for administrative reasons, for example, because they lacked the required transport authorization.

Other substances not under international control, and trends in the illicit manufacture of cocaine

175. In addition to requiring an oxidizing agent such as potassium permanganate, the processing of cocaine requires a variety of other chemicals, including common acids, bases and solvents used in the extraction of cocaine base from coca leaves and for the conversion of cocaine base into hydrochloride. In recent years, a number of other chemicals have also been encountered in clandestine cocaine laboratories, including chemicals that help to improve the efficiency of the manufacturing process by reducing the volume of chemicals needed and/or the processing time, as well as chemicals used to illicitly manufacture ammonia, hydrochloric acid or sulfuric acid. Many of those are common chemicals that can be substituted for one another and that are legitimately traded, transported and used in large quantities. It was often those chemicals that were seized for administrative reasons. The majority of them were sourced domestically.

176. On form D for 2018, as in previous years, significant seizures of common **acids, bases and solvents** not under international control were reported by countries in South America, in particular the three coca-producing countries, Bolivia (Plurinational State of), Colombia and Peru, as well as Ecuador and Venezuela (Bolivarian Republic of). Smaller yet notable seizures were also reported by some countries situated along cocaine trafficking routes and by countries representing destination markets, such as those in Europe. In those countries, seizures were mainly made in clandestine laboratories where cocaine was being recovered from the materials in which it was incorporated for smuggling.

177. While the overall situation with regard to seizures of solvents remained largely unchanged, with a wide variety of **acetate solvents** having been seized in large amounts, forensic profiling results suggest a shift away from ethyl acetate towards other acetate solvents being used in the final crystallization step of cocaine manufacture.²⁹ The same profiling results also suggest that methyl ethyl ketone, a chemical under international control, remained the most prevalent solvent used to dissolve the hydrochloric acid in the crystallization step. However, in the majority of samples analysed, no solvent was utilized for that purpose.

178. Significant seizures of **calcium chloride**, a chemical that serves both as a drying agent for solvents and to produce concentrated hydrochloric acid, continued to be reported on form D for 2018. Continuing a trend noted by the Board in its previous report on precursors,³⁰ the largest amounts were seized in Ecuador, totalling nearly 145 tons, an increase from 80 tons in 2017 and 24 tons in 2016. According to the authorities, the substance is sourced in Peru and smuggled through Ecuador to Colombia. Seizures in Colombia and the Plurinational State of Bolivia amounted to, respectively, 75 tons and 30 tons, while Peru seized more than 14 tons, the largest amount ever reported. Indications of the use of calcium chloride for solvent drying were also reported by Chile.

179. **Sodium metabisulfite** is one of the chemicals reflecting the increased efficiency of clandestine cocaine processing. Specifically, it is a reducing agent used to standardize the oxidation level of cocaine base sourced from various extraction laboratories prior to further processing. In 2018, seizures in amounts greater than 15 tons were reported by Colombia (more than 41 tons in 132 incidents, originating in Colombia), the Plurinational State of Bolivia (nearly 24 tons in 28 incidents, of which two thirds were made in illicit laboratories) and Peru (almost 17 tons in 7 incidents).

²⁹United States Drug Enforcement Administration Special Testing and Research Laboratory, Cocaine Signature Program.

³⁰E/INCB/2018/4, paras. 169–170.

180. Of the three coca-producing countries, Colombia and Peru reported the illicit manufacture of a number of other chemicals needed in cocaine processing. These included ammonia, hydrochloric acid and sulfuric acid. Specifically, Colombia reported the dismantling of two illicit laboratories involved in the manufacture of **sulfuric acid** in 2018. In the first six months of 2019, eight laboratories were dismantled and more than 400,000 litres of sulfuric acid were seized. Indications of the illicit manufacture of **hydrochloric acid** were reported by Chile and Peru; the illicit manufacture of the substance is also known to have occurred in Colombia. Both Colombia and Peru reported that all chemical starting materials had been sourced domestically. Ecuador reported seizures of **nitric acid** (1,100 litres) made on the basis of its alleged use in the illicit manufacture of hydrochloric acid; the substance had been smuggled on trucks, hidden among other goods.

181. On form D for 2018, seizures of chemicals that can be used in the illicit manufacture of **ammonia** were reported by Bolivia (Plurinational State of) and Peru and included urea, ammonium nitrate and ammonium sulfate, each of which were seized in amounts totalling 1 or more tons. In addition, the illicit manufacture of ammonia from urea is known to have occurred in Colombia.

182. With regard to the size of cocaine processing operations, chemical analyses of a large seizure of cocaine that originated in the Nariño coca growing region of Colombia suggest a shift in the traditional small-batch method of cocaine processing (typically 1 kilogram at a time) to a multi-kilogram, high-throughput approach.³¹

183. As with other drugs, seizures of **cutting agents** (adulterants and diluents) continued to be reported in connection with illicit cocaine processing. Cutting is performed at the stage of initial crystallization of cocaine hydrochloride, either at points along the trafficking route, or in destination countries before retail-level distribution. Cutting agents seized in notable amounts in 2018 included caffeine (reported by Brazil), lactose (Argentina), various local anaesthetics such as lidocaine, procaine and xylocaine (Argentina and Brazil) and phenacetin (Brazil). Significant amounts of the same cutting agents were also reported by the Netherlands and Spain. Chile reported the dismantling of cutting laboratories.

³¹Jennifer R. Mallette and others, "Changes in illicit cocaine hydrochloride processing identified and revealed through multivariate analysis of cocaine signature data", *Science and Justice*, vol. 58, No. 2 (March 2018), pp. 90–97.

C. Substances used in the illicit manufacture of heroin

1. Acetic anhydride

184. Acetic anhydride is a key precursor of heroin and a frequently and widely traded chemical that is included in Table I of the 1988 Convention. Acetic anhydride is required not only in the illicit manufacture of heroin, but also in certain P-2-P-based methods used in the illicit manufacture of amphetamine and methamphetamine (see annex VIII).

185. In 2018 and 2019, the number of attempts to divert acetic anhydride from international trade remained low; as in the past, most of the known cases of diversions of the substance occurred at the level of domestic trade and distribution. The number of newly initiated or continued investigations into suspected diversion attempts and seizures of acetic anhydride identified since 2016, in particular in Europe and West Asia, has been far from negligible. Some of the investigations were unnecessarily delayed, took a long time or were inconclusive, which made it possible for traffickers to continue with their illicit activities, as illustrated in box 2.

Licit trade

186. From 1 November 2018 to 1 November 2019, the authorities of 25 exporting countries and territories used the PEN Online system to submit more than 1,700 pre-export notifications regarding shipments of acetic anhydride. The shipments were destined for 87 importing countries and territories and involved a total of approximately 530 million litres of acetic anhydride.

187. In 2019, the authorities of the importing countries objected to approximately 7 per cent of pre-export notifications related to proposed exports of acetic anhydride, mostly for administrative reasons. This was less than in the period 2016–2018, when approximately 10.5 per cent of proposed shipments of acetic anhydride were objected to.

188. In 2019, the Board was informed about a review by the authorities of Czechia of the legitimate needs for and proposed end use of more than 100,000 litres of acetic anhydride purportedly ordered by a legitimate Czech company in a country outside the European Union. Based on information received from the company, the authorities had only authorized the import of a portion of the proposed amount (less than 20,000 litres). **The Board commends all Governments that exercise the adequate scrutiny when authorizing imports and exports of acetic anhydride, as well as those that have cooperated with each other and the Board to investigate seizures and cases of diversion and diversion attempts.**

Box 2. Examples of ongoing investigations into diversion attempts involving acetic anhydride*Case 1*

In mid-2017, on the basis of an unusual pattern observed in pre-export notifications, the Board inquired about the legitimacy of a pre-notified shipment of 24 tons of acetic anhydride, ordered in a third country by a legitimate importer located in a State member of the European Union. The investigations revealed that the shipment had been destined for an end user located in another European Union member State. Owing to the delayed exchange of information and the lack of coordination among the countries concerned, the investigations gradually ceased. The investigations resumed in 2019 and it was found that in 2017 the proposed end user had not received the shipment in question. Instead, companies in other European countries were identified as the likely consignees of the shipment after it had been split into smaller consignments. To date, it has not been possible to verify whether the split consignments of acetic anhydride in question had reached those consignees. Owing to the particular circumstances of the case, the possibility that the acetic anhydride had actually been diverted and “lost” during its delivery cannot be excluded.

Case 2

In July and August 2017, respectively, the competent national authorities of the United Arab Emirates and Iraq objected, through the PEN Online system, to two shipments of 24 tons and 20 tons of acetic anhydride, proposed to be exported to the two countries by a particular authorized precursor operator in Poland. In both cases, the shipments were objected to because the respective competent national authorities of Iraq and the United Arab Emirates had not authorized the import of the acetic anhydride. However, two years later, the authorities of the United Arab Emirates informed the authorities in Poland that the proposed importer in the United Arab Emirates had denied having placed an order for the shipment in question. Nevertheless, the documentary evidence that the Polish authorities collected during the investigation into the matter in Poland and later shared with their counterparts in the United Arab Emirates had clearly stated the intention of the proposed importers to purchase acetic anhydride in Poland. This was also the case with regard to the proposed shipment destined for a company in Iraq. Both shipments were eventually suspended in Poland. Despite clear indications of attempts by the two companies in Iraq and the United Arab Emirates to import acetic anhydride without the required authorization, the Board has no information as to whether or not the companies in Iraq, Poland and the United Arab Emirates have concluded, since 2017, any commercial transactions with other vendors or buyers of acetic anhydride in Poland or elsewhere.

Case 3

In 2019, authorities in Poland launched investigations into the trade activities of an authorized precursor operator in their country that had been identified as a suspected source of acetic anhydride seized in Afghanistan in September 2017 and in the Netherlands in June 2018. The investigations resulted in the identification of more than 70 tons of the substance that the Polish company had sold between 2017 and 2018 to several unauthorized companies in five European Union member States, including the Netherlands, as well as to dubious companies in Poland. Such sales continued even after the seizure of the substance in Afghanistan. Some of these unauthorized companies, or persons believed to be associated with them, were known to law enforcement agencies as a result of other criminal investigations, including drug-related investigations. Despite this evidence, the Polish company in question was still registered with the competent national authorities as a legitimate precursor operator at the time of writing.

189. The Board also wishes to remind Governments that the main objective of its queries into objected shipments made to competent national authorities is to verify whether such shipments were objected to only for administrative reasons, or whether the shipments in question might actually be diversion attempts. In 2019, INCB shared with Governments a guide comprising practical tips for follow-up investigations into shipments of precursor chemicals that were objected to through the PEN Online system. **The**

Board wishes to encourage all users of the PEN Online system to make the best use of the tool, which provides examples of best practices from a number of investigations into suspected diversion attempts.

Trafficking

190. Of the 21 countries and territories that reported seizures of acetic anhydride on form D for 2018, six countries — China, Georgia, Iran (Islamic Republic of), the

Netherlands, Pakistan and Turkey— reported seizures of more than 10,000 litres. In total, 188,000 litres of acetic anhydride were seized worldwide in 2018, 61,100 litres more than in 2017. Poland, followed by China and the United Arab Emirates, in that order, were the most frequently reported sources – or the last known countries of departure – of acetic anhydride seized worldwide in 2018 and 2019. Other countries mentioned included Belgium, Czechia and the Netherlands.

191. The amounts of acetic anhydride seized in Afghanistan in 2018, as well as in 2019, were much smaller than in previous years. In 2018, 7,364 litres of the substance were seized, approximately one fifth (20 per cent) of the amount seized in 2017 (37,700 litres). Most of that amount could be attributed to a single seizure of a shipment of 7,000 litres of acetic anhydride that had originated in China and had been trafficked through the Islamic Republic of Iran. In 2019, only two seizures involving small amounts of acetic anhydride were communicated by Afghanistan.

192. In 2018, 27,680 litres of acetic anhydride were seized in the Islamic Republic of Iran, 7,000 litres (36 per cent) more than in 2017. At least 14,000 litres were seized in the first half of 2019. Shipments of the substance seized in the Islamic Republic of Iran in 2018 and 2019 originated in, or were reported to have been trafficked through, China (3 shipments), the United Arab Emirates (2 shipments), and Belgium (1 shipment). The Board notes that the seizure of 13,900 litres of acetic anhydride in the port of Bandar Abbas in the Islamic Republic of Iran in May 2019 was facilitated by a voluntary exchange of information between the competent national authorities and the private sector.

193. During the reporting period, Turkey continued to be an important transit country for shipments of acetic anhydride, believed to be sourced by traffickers in the European Union, then transported to countries in West Asia, including Afghanistan, Iran (Islamic Republic of) and Iraq. In 2018, the authorities in Turkey seized 10 consignments of acetic anhydride, amounting to 38,569 litres. The Board regrets that only 1 of those 10 seizures was communicated through PICS. The communicated seizure involved a shipment of almost 14,000 litres (15 tons) of the substance and was believed to have been sourced in the Netherlands. While the Government of Turkey provided on form D for 2017 further information regarding the suspected origin of the seized acetic anhydride, it did not submit similar information for the seizures conducted in 2018.

194. According to information shared through PICS or during case meetings, the most frequently reported modus operandi used by traffickers continued to be the

concealment of acetic anhydride among spare car parts and second-hand cars, followed by the misdeclaration of acetic anhydride at customs as diverse types of liquids used for car maintenance, such as “motor oil”, “windshield fluid”, or “antifreeze agent”. For example, in 2018, authorities in Poland and Turkey launched investigations into a seizure of approximately 450 litres of acetic anhydride in Turkey earlier that year. The substance, sourced from a Polish company co-owned by local and foreign nationals, was concealed among cargo containing second-hand cars and spare car parts and transported from Poland to Afghanistan through Turkey. Investigations further revealed that the seized shipment was only one of several shipments declared as “spare car parts and second-hand cars” that the Polish company had been sending to consignees in Afghanistan, Iran (Islamic Republic of) and the United Arab Emirates since 2016, including after the seizure of the substance in Turkey in 2018.

195. The authorities of the United Arab Emirates have not reported on form D any seizures of acetic anhydride since 2000, except for a seizure of 4,000 litres in 2009. Despite the absence of reported seizures, since 2016, the competent national authorities of the United Arab Emirates and other countries have identified several companies in the United Arab Emirates that have appeared in law enforcement investigations either as purported consignees of pre-notified suspicious shipments involving large amounts of acetic anhydride, as companies used by traffickers to transport seized shipments of acetic anhydride or as companies responsible for payments for shipments of acetic anhydride seized elsewhere. There are also indications that traffickers might have used free trade zones in the United Arab Emirates for the trafficking of precursor chemicals. **The Board wishes to encourage all countries in which free trade zones exist to review their control measures, including risk profiling of trafficking in precursors, in order to reduce the risk of such zones being used by criminal organizations for their illicit activities.**

196. In Pakistan, seizures of acetic anhydride have fluctuated significantly since 2000. In 2018, Pakistan reported seizures of a total of 19,803 litres of acetic anhydride. Most of that amount, 15,500 litres, suspected of having originated in Poland, could be attributed to a single seizure conducted in the port of Karachi in Pakistan in January 2018. Following that, the authorities of Pakistan reported three additional seizures of the substance in 2018, amounting to 4,283 litres. The Board is not aware of any seizures of acetic anhydride in Pakistan in the first 10 months of 2019. The lack of any recent major seizures of acetic anhydride in Pakistan (except for the above-mentioned seizure of 15,500 litres) may indicate a sudden change of routes used by criminal organizations for trafficking in the

substance; however, as this is unlikely, the situation may warrant a further review of the precursor control measures currently being implemented in Pakistan, including the level of profiling of trafficking in acetic anhydride.

197. For the time being, the diversion of acetic anhydride from international trade involving Pakistan and its subsequent diversion from domestic distribution channels appear to be unlikely, as only one shipment of acetic anhydride destined for Pakistan, amounting to approximately 5,600 litres, has been pre-notified through PEN Online since 2017. Suspicions have been raised sporadically by some law enforcement experts about the possible illicit manufacture of heroin in the country. While these suspicions could, in part, be substantiated by past seizures of acetic anhydride, as well as seizures of sizeable amounts of opium and morphine in the country, suspicions about the possible illicit manufacture of heroin in Pakistan could not be corroborated to date. However, the recent emergence of illicit heroin manufacture in Europe, despite being at a very low level, proves that such manufacture can emerge even in countries far away from the regions where opium poppy is illicitly cultivated. **The Board wishes to encourage all countries, including those neighbouring Afghanistan, to remain vigilant and communicate through PICS, or through Project Cohesion, any incidents that might indicate the emergence of illicit heroin manufacture outside countries in which illicit cultivation of opium poppy occurs.**

198. The European Monitoring Centre for Drugs and Drug Addiction and the European Union Agency for Law Enforcement Cooperation (Europol), in the *European Union Drug Markets Report, 2016*, provided information about the emergence of a new trafficking route, the so-called Southern Caucasus route, which, in addition to being used for trafficking in opiates from the Golden Crescent, was apparently also being used for trafficking in acetic anhydride, as corroborated by a seizure of 2,500 litres of an unusual liquid mixture that, in addition to acetic anhydride, contained almost 600 kg of heroin, as well as smaller amounts of morphine and codeine. The mixture was seized in a port in Batumi, Georgia, in 2014, from a lorry that arrived in Georgia from the Islamic Republic of Iran via Azerbaijan. The mixture was purportedly destined for Ukraine and Moldova.³²

199. Later in 2017, in the framework of the INCB-led intelligence-gathering operation “Follow me”, participating countries identified a suspicious attempt by a Georgian company to secure supplies of acetic anhydride on the

internal market of the European Union. In that same year, Georgia also appeared in another investigation as a proposed transit country for the trafficking of acetic anhydride from Europe. The Board is also aware of a seizure of acetic anhydride in the European Union from a truck registered in Georgia. Georgia and Azerbaijan further appeared in investigations into the suspected misuse of online trading companies by acetic anhydride traffickers. Two seizures of acetic anhydride, totalling 13,733 litres, conducted in the seaport of Poti in Georgia in 2018, further substantiated the appearance of that country on the acetic anhydride trafficking map.

200. The Board, in its 2017 report on precursors, alerted Governments to the potential misuse of online trading platforms by traffickers of precursor chemicals and has since then continued to support competent national authorities in their efforts to exchange information on investigations into the suspected misuse of legitimate online trading platforms by traffickers of acetic anhydride, in particular those operating in Europe and Asia. An example of one such investigation is presented in box 3 overleaf.

201. Since 2016, Iraq has been identified as a proposed transit or destination country in at least five follow-up investigations into seizures of acetic anhydride trafficked from Europe, conducted in Bulgaria, Iran (Islamic Republic of) and Turkey. At least 25,000 litres of the substance allegedly destined for Iraq have been seized worldwide since 2016. The last such seizure, involving 5,400 litres of acetic anhydride, misdeclared as “soya oil”, was communicated by the Islamic Republic of Iran in November 2018.

202. Since 2017, the Board has identified several suspicious shipments of acetic anhydride that were pre-notified through the PEN Online system and were destined for consignees in Ukraine. Recently, Ukraine was identified as a possible transit country for a shipment of acetic anhydride seized in West Asia.

203. The Governments of a number of countries, including Azerbaijan, Georgia, Iraq and Ukraine, are encouraged to review any information related to the apparent involvement of their respective countries in recently identified cases of diversion and trafficking in acetic anhydride and to inform the Board of any findings that could assist the Board in further determining any new changes in acetic anhydride trafficking routes.

204. In the past several years, the number of seizures of acetic anhydride in Central Asia has been low. For example, Turkmenistan has not reported on form D any seizures of acetic anhydride since 2000. Uzbekistan last reported seizures of acetic anhydride in 2017, when 20 litres of the

³²European Monitoring Centre for Drugs and Drug Addiction and the European Union Agency for Law Enforcement Cooperation, *EU Drug Markets Report: In-depth Analysis* (Luxembourg, Publications Office of the European Union, 2016), p. 88.

Box 3. Investigations into the suspected misuse of online trading platforms by traffickers

In late 2018, the authorities of India inspected the premises of a company in their country that was regularly using the services of legitimate online trading platforms to seek potential buyers of acetic anhydride in several countries, including Afghanistan, Iran (Islamic Republic of), Pakistan and the United Arab Emirates. The company was registered by the authorities in India as a trader in acetic anhydride. During the inspection of the company premises, inspectors observed the company's employees repackaging stocks of acetic anhydride into jerrycans labelled as "motor oil". The substance was purportedly destined for a consignee in Afghanistan. The inspection resulted in the seizure of almost 10 tons of acetic anhydride, the largest seizure of the substance conducted in the country since 2000.

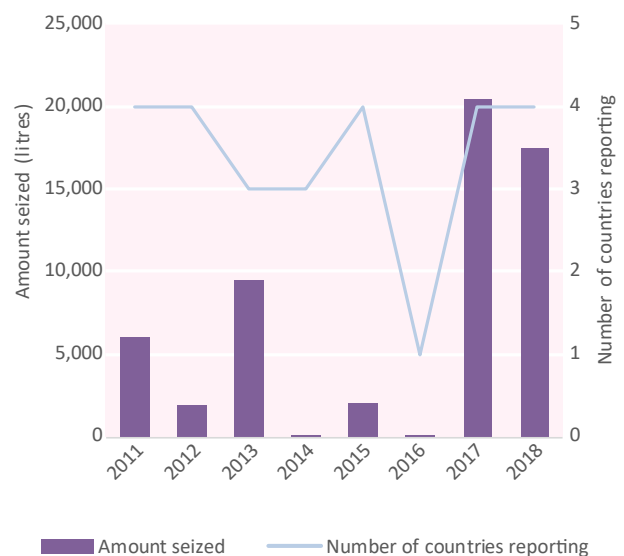
The Board commends the authorities of India for their efforts and the successful conclusion of the case and is pleased to note that the seizure was facilitated by voluntary cooperation between the authorities of India and the private sector. The Board also appreciates the sharing of information by the authorities of India with a number of other countries concerned regarding the suspected misuse of online trading platforms, thereby providing those countries with an opportunity to verify the legitimacy of proposed transactions involving acetic anhydride at their end. Regrettably, most of the countries that received that information have not provided any feedback to the authorities of India regarding any outcomes of their investigations into the matter.

substance were seized. According to open source media, in May 2019, the authorities in Kyrgyzstan seized approximately 100 litres of acetic anhydride, but no further details are available. Before that, the only reported seizures of the substance in the country were in 2007 (9 litres) and 2012 (almost 800 litres).

205. The total amount of acetic anhydride seized within the European Union substantially increased in 2017 (20,400 litres) and 2018 (17,400 litres), compared with the period from 2011 to 2016 (see figure XIII). In addition, since 2016, the authorities of countries in the European Union prevented an unprecedented number of attempts by traffickers to divert acetic anhydride, primarily from distribution channels of the internal market of the European Union. Nonetheless, the amounts of the substance known to have been diverted within and/or smuggled from the European Union were enough to enable the illicit manufacture of at least 100 tons of heroin in Afghanistan.

206. The amount of acetic anhydride that was diverted might also partly explain the emergence of illicit heroin manufacture in the past three years in some European countries, mainly the Netherlands, but also Bulgaria and Germany. According to a media report, an illicit heroin laboratory was also identified in Albania in 2019.

Figure XIII. Seizures of acetic anhydride reported by States members of the European Union on form D, 2011–2018



207. Backtracking investigations into diversion and seizures of acetic anhydride linked with European Union countries provided indications of existing links between traffickers of acetic anhydride and persons previously

known to law enforcement authorities from their involvement in other forms of serious crime, including trafficking in drugs, persons and firearms. The investigations also provided evidence of the involvement of foreign nationals, including those from West Asian countries, in precursor-related criminal activities in Europe. In addition, the investigations revealed some difficulties in preventing the diversion of and trafficking in acetic anhydride (see para. 208 and box 2). **The Board appreciates the level of cooperation of the individual countries concerned, especially Poland, as well as of the European Commission, in identifying and addressing existing weaknesses in relation to European Union legislation on precursors, in terms of both its implementation at the national level and any possible deficiencies it may have. Aware that the European Commission is currently in the process of evaluating the efficiency of European Union legislation on precursors, the Board trusts that any possible loopholes will be addressed and stands ready to assist in the evaluation process.**

208. The legal requirement stipulated in the 1988 Convention for proving an alleged offender's intent or knowledge, or more specifically, for producing evidence showing that the suspect knew that the substance in question was to be used in illicit drug manufacture, has sometimes been perceived as a possible impediment to the successful investigation, prosecution and adjudication of precursor-related crime in practice. Recent accounts of investigations into cases of trafficking in acetic anhydride have confirmed that the understanding of what may constitute proof of intent in practice, in other words, what the criminal justice system in a country may consider as acceptable evidence that a suspect knew, or did not know, that a substance was to be used in illicit drug manufacture, has led to significant disparities in the outcomes of related prosecutions and, in some jurisdictions, may have even affected the ability of law enforcement authorities to fully investigate precursor-related crime. An analysis of associated legal requirements and examples of approaches taken in some jurisdictions are provided in box 4.

Box 4. Proof of intent and knowledge in precursor-related crime

Article 3, paragraph 1, subparagraph (a) (iv), of the 1988 Convention requires States parties to the Convention to establish as criminal offences under their domestic law, when committed intentionally, the manufacture, transport or distribution of equipment, materials or of substances listed in Tables I and II, knowing that they are to be used in or for the illicit cultivation, production or manufacture of narcotic drugs or psychotropic substances. Similarly, under subparagraph (c) (ii), subject to their constitutional principles and the basic concepts of their legal systems, States parties are also required to criminalize the possession of substances listed in Tables I and II, knowing that they are being or are to be used in or for the same purposes.

Paragraph 3 of the same article further provides that knowledge, intent or purpose required as an element of an offence set forth in paragraph 1 may be inferred from objective factual circumstances.

In practice, producing proof of intent or knowledge at the time the offence was committed may be challenging, irrespective of the evidentiary rules that may apply in a given national legal system. Defendants commonly deny the requisite intent or degree of knowledge of the relevant elements necessary for the establishment of their conduct as criminal, yet tribunals must be satisfied, on the basis of admissible evidence, that the defendants possessed the knowledge that they deny they had in order to reach a verdict.^a In order to be admissible, however, such evidence is not required to be in the form of direct proof, such as a confession or documentary evidence explicitly confirming actual knowledge.^b The Convention does not impose, but explicitly permits, the inference of intent from circumstantial evidence.^c

At the same time, the requirement of proving intent in precursor-related crime serves an important purpose. Precursors are traded and used widely for licit purposes, and criminal responsibility for their diversion into illicit channels must not be inadvertently extended to bona fide operators without adequate proof.^d Care must therefore be exercised by examining all evidence rigorously and fully while also ensuring that legal requirements are not interpreted in an unduly narrow way, bearing in mind the objectives of the Convention to prevent the diversion of precursors.

Box 4. Proof of intent and knowledge in precursor-related crime (*continued*)

The Convention recognizes, in article 3, paragraph 11, that “the description of offences (...) and of legal defences thereto is reserved to the domestic law of a Party and that such offences be prosecuted and punished in conformity with that law”. However, recent examples from various jurisdictions have shown that disparate standards of what may constitute adequate proof of intent or knowledge at different stages in the investigation and adjudication of precursor-related crime have sometimes led to vastly different outcomes of similarly constituted cases, and have, in some cases, even created challenges already at the stage of investigating potential crime. The Board is aware of cases where proof of intent or knowledge was de facto treated as a requirement for justifying the opening of criminal investigations, which could not be satisfied and thus may have led to suspicious activity not being investigated fully, ultimately resulting in impunity for the alleged perpetrators.

In this context, the Board wishes to refer to the Commentary on the 1988 Convention, which acknowledges that a rigorous analysis of “knowledge”, for example, has to address circumstances of “wilful blindness”, where the actor “closes his eyes to the obvious”; cases of *dolus eventualis*, where the offender takes an obvious risk; and circumstances in which any person in the actor’s position would have had the requisite knowledge.^e An all too narrow interpretation of “knowledge”, or of what may constitute acceptable proof of its presence (or absence) in practice, may effectively derail attempts to hold perpetrators accountable for precursor-related crime.

The Board further wishes to recall that the Convention permits States parties to adopt more strict or severe measures than those provided by it if, in the party’s opinion, such measures are desirable or necessary for the prevention or suppression of illicit traffic. For example, Australia amended its criminal laws in 2015 and, applying a system of strict liability, no longer requires proof of mental elements of the crime such as knowledge or intent to be proven in the case of persons who engaged in the import or export of “border-controlled precursors” (a category of precursors defined in Australian law) that have ended up being used in illicit drug manufacture.

In the light of the foregoing discussion, the Board wishes to highlight that the provisions of the Convention provide sufficient flexibility for States parties to adopt national criminal legislation on precursor-related offences in a way that meets minimum international requirements yet remains responsive to the requirements of their respective national legal systems and the realities on the ground. Even without necessitating changes in legislation, criminal procedure or evidentiary rules, criminal justice practitioners at all levels can contribute to curbing impunity for precursor-related crime by being mindful of their interpretation and application in practice of existing laws in line with the objectives of the Convention and the safeguards and allowances built into it.

^aSee also the Commentary on the 1988 Convention, para. 3.97.

^b*Ibid.*, para. 3.98.

^c*Ibid.*, para. 3.100.

^d*Ibid.*, para. 3.38.

^e*Ibid.*, para. 3.97.

209. Despite the significant need for acetic anhydride in the illicit manufacture of heroin, the number of seizures of the substance in Colombia, Mexico and Myanmar has been low for many years. Although Mexico seized sizeable amounts of acetic anhydride in the past, those seizures were likely linked with the manufacture of synthetic drugs rather than heroin.

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

210. The illicit manufacture of heroin requires, in addition to acetic anhydride, a variety of other common chemicals not under international control, in particular chemicals used in the extraction of morphine from opium. One of the most frequently encountered of those

chemicals is **ammonium chloride**. Afghanistan, where the chemical is under national control, has, since 2008, regularly reported seizures of ammonium chloride, albeit in widely varying amounts, ranging from just 350 kg in 2009 to almost 45.5 tons in 2016. Seizures in 2018 amounted to approximately 2.5 tons.

211. In addition to the non-scheduled chemicals used in the extraction of morphine from opium, there are also non-scheduled acetylation agents that can be substituted for acetic anhydride in the conversion of morphine to heroin, although actual seizures of substitutes for acetic anhydride have been rare. The acetylation agent most frequently seized in this context is **acetyl chloride**. It has important legitimate applications; however, it is more hazardous to handle and use than acetic anhydride because it is corrosive, strongly irritating to the eyes, nose and skin and reacts violently with water.

212. In 2018, notable seizures of acetyl chloride were reported by the Islamic Republic of Iran and the United Arab Emirates. The first seizure occurred in the Jebel Ali seaport in Dubai, United Arab Emirates, and involved almost 2,800 litres of the substance. The contraband had been concealed among other legitimate commodities and had been destined for a consignee in the Islamic Republic of Iran that could not be located in the country. The second seizure involved nearly 20,000 litres of acetyl chloride and was conducted in the port of Bandar Abbas in the Islamic Republic of Iran, only a few days after the seizure in the United Arab Emirates. The substance had been destined for a consignee in Afghanistan. The seizures may indicate partial changes in the modus operandi used in trafficking in heroin precursors. Countries in West Asia where acetyl chloride is under national control include Afghanistan and Pakistan.

213. The Board wishes to remind Governments that both ammonium chloride and acetyl chloride are included in the limited international special surveillance list of non-scheduled substances owing to their possible use in the illicit manufacture of heroin. In the light of the significant seizures of acetyl chloride in 2018, **the Board further encourages countries, in particular in West Asia, to remain vigilant against attempts to divert and smuggle acetyl chloride through the region and to communicate any seizures of the substance through PICS. Seizures should be duly investigated to prevent future trafficking in the substance involving the same companies.**

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

1. Ergot alkaloids and lysergic acid

214. On form D for 2018, seizures of the three precursors of lysergic acid diethylamide, ergometrine, ergotamine and lysergic acid, were reported in all regions except Africa and Oceania. As in previous years, aggregated annual seizures of ergot alkaloids, namely ergotamine, reported by individual countries were typically small, not exceeding 150 grams; the seizures were mostly made for administrative reasons. China reported seizures of almost 450 grams of ergometrine. Where the origin was known, it was domestic, within the country where the seizure was made. Seizures of lysergic acid were reported by the Russian Federation (2 kg) and the United States (nearly 600 grams), however, no additional information was provided.

2. N-Acetylanthranilic acid and anthranilic acid

215. The situation regarding the illicit manufacture of methaqualone remained unchanged in 2018 in comparison with 2017 and previous years: no instances of illicit manufacture of the substance were reported. However, South Africa reported having stopped three incoming shipments totalling more than 64 tons of **acetantranil**, a possible precursor of methaqualone that is not under international control. The shipments were detected by sniffer dogs, but it remained unclear why they were stopped.

216. The largest seizures of methaqualone precursors under international control were reported by Myanmar, the first such seizures to be reported by the country. They amounted to 1,000 litres of *N*-acetylanthranilic acid and 2.1 tons of anthranilic acid, as well as 2,800 litres of the latter substance in solution form. In all instances, the seized substances had allegedly originated in China. No further information was provided that could help to put these seizures into context. Circumstantial information was also not provided in the case of Mozambique, which reported instances of domestic diversion and seizures of 83 litres of *N*-acetylanthranilic acid.

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

Licit trade

217. In the two-year period following the international scheduling of the two precursors of fentanyl, NPP and ANPP, as at 1 November 2019, 31 pre-export notifications

had been sent for NPP and 24 for ANPP by seven exporting countries to 21 importing countries. Amounts larger than those required for limited research and analytical purposes were proposed for import into a number of countries known to manufacture fentanyl legitimately, including Brazil, Germany, Slovakia, South Africa and the United States. Moreover, at least 20 countries and territories that provided such information voluntarily explicitly stated on form D for 2018 that they had no need for either NPP or ANPP, or only needed the substances for limited research and laboratory analytical purposes. Among those countries was Mexico, which had declared on several other occasions that there was no legitimate manufacture of fentanyl in the country.

218. Belgium and India reported having stopped shipments of NPP in 2018. Nevertheless, INCB has become aware of exports in 2018 of NPP from India that lacked the required no-objection certificates, i.e., that were effected without the knowledge of the competent national authorities, even though NPP and ANPP have been under national control in India since 28 February 2018. Although the authorities in India made an arrest and are investigating the incidents, which allegedly involved the same *modus operandi*, INCB has determined that, in at least one instance involving 400 kg of the substance, the consignee in Europe was legitimate and authorized to import NPP and ANPP. **The Board reminds all Governments that NPP and ANPP are included in Table I of the 1988 Convention, thus consignments containing those substances require the sending of pre-export notifications prior to their export. The Board furthermore encourages Governments to put the necessary systems in place nationally to ensure that their competent national authorities are informed of any planned export, that the manufacture and distribution of NPP and ANPP are adequately monitored, and that all diversions and attempted diversions are fully investigated with a view to gathering relevant intelligence and preventing future diversions using the same *modus operandi*.**

Trafficking

219. On form D for 2018, four countries reported seizures of either NPP or ANPP. The largest amount (275 kg) was reported by the United States, which also reported the dismantling of two fentanyl laboratories. In addition, France communicated through PICS one incident involving the seizure of approximately 0.5 kg of ANPP in a clandestine laboratory. The substance was allegedly ordered in China on the darknet. France also communicated two additional incidents that occurred in June and July 2019 involving a few grams of ANPP smuggled from the United States through the postal system.

220. During 2018, it also became apparent that traffickers had started to seek alternatives to NPP and ANPP:

(a) In September 2018, India dismantled the first illicit fentanyl laboratory discovered in its territory. Approximately 11 kg of fentanyl were recovered; the fentanyl had been synthesized from non-scheduled pre-precursors via NPP and subsequently ANPP;

(b) Between mid-2018 and mid-2019, INCB became aware of at least 30 incidents involving 4-AP, a fentanyl pre-precursor not under international control (see also para. 60) that was included in the limited international special surveillance list. All of the incidents occurred in Mexico and involved amounts between 0.3 kg and 1.8 kg, and had originated in either China, including Hong Kong, China, the Netherlands or Singapore. A significantly larger consignment of 4-AP was intercepted in August 2019 at the port of Lázaro Cárdenas in Mexico, involving 275 kg of the substance among bags of calcium chloride amounting to a total weight of 23 tons;

(c) Other alternatives to NPP and ANPP not under international control that were reported as having been encountered included precursors and chemical intermediates used in the synthesis of fentanyl by means of the so-called Janssen method, the originally patented method of fentanyl manufacture, as well as chemically masked fentanyl pre-precursors (such as *t*-BOC 4-AP); such chemical masking is a *modus operandi* also seen in relation to precursors of other types of drugs;³³

(d) In June 2019, authorities in Mexico dismantled a clandestine laboratory site in which a variety of controlled and non-controlled fentanyl precursors and pre-precursors, but no end products, were found. Authorities believe that the site had been used to experiment with the synthesis of NPP and ANPP from their precursors. If substantiated, the purpose of the laboratory, together with border seizures of fentanyl pre-precursors, may also indicate a shift from trafficking in fentanyl precursors to their possible manufacture within Mexico;

(e) Results from forensic impurity profiling of samples of fentanyl seized in the United States in 2018 suggested that the Janssen method, which does not rely on NPP and ANPP, had become the predominant synthesis method; 70 per cent of the powder exhibits analysed and 52 per cent of the tablet exhibits analysed supported this conclusion.

³³E/INCB/2018/4, box 5.

221. The Canada Border Services Agency reported a number of potential precursors of fentanyl and of fentanyl analogues among the new substances identified in 2018. In fact, five out of the seven newly identified fentanyl-related substances can be classified as precursors; all of them are known chemical intermediates used in the synthesis of the respective fentanyls or are their masked analogues. In June 2019, the Royal Canadian Mounted Police seized an unspecified amount of **aniline**, a chemical central to the synthesis of various fentanyls by different synthesis routes, yet also widely used in legitimate industries. Aniline is included in the limited international special surveillance list of non-scheduled substances because of its possible use in the illicit manufacture of fentanyls.

222. Several of the above-mentioned developments appear to be the result of tightened controls in China. **The Board welcomes the measures taken by China in the spirit of shared responsibility. It also notes the generic approach taken by Canada in controlling some precursors of fentanyls** (see para. 24). Other countries where additional precursors of fentanyls, specifically precursors of 3-methyl fentanyl, are under national control include Belarus and the Russian Federation, which imposed such control in response to earlier outbreaks of misuse of those substances.³⁴

223. The Board is concerned that information about the sources of non-medical fentanyls and their precursors is still limited. The Board is also concerned that Governments are unable to quickly address shifts to non-scheduled pre-precursors, in particular in cases where those substances have legitimate uses, and **reminds Governments, at a minimum, to cooperate with each other and with the Board in exchanging actionable information, preferably through PICS. The Board also wishes to remind Governments of the updated limited international special surveillance list, which includes a number of chemicals used in the illicit manufacture of fentanyls and highlights those for which INCB is not aware of any legitimate use.**

³⁴Information about pre-precursors and other chemicals under national control is available to competent national authorities as part of the information package on the control of precursors provided on the Board's secure website.

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 *gamma*-hydroxybutyric acid

224. Seizures of **GBL** continued to be reported on form D for 2018, typically, as in the past, by countries in Europe. Amounts ranged from less than 1 litre (reported by Italy) to more than 27,500 litres (reported by Lithuania). According to the Australian Criminal Intelligence Commission, 22 clandestine laboratories manufacturing GHB and/or GBL were detected in Australia in the period 2017–2018, an increase of 100 per cent compared with the previous reporting period.³⁵ Outside Europe, only the United States reported seizures of GBL. Hungary and Spain were the only countries to have reported seizures of **1,4-butanediol**, a precursor of GBL and a pre-precursor of GHB, on form D for 2018.

2. Precursors of new psychoactive substances, including substances recently scheduled under the Single Convention on Narcotic Drugs of 1961 or the Convention on Psychotropic Substances of 1971

225. On form D for 2018, a number of European countries continued to report instances involving precursors of new psychoactive substances and of recently scheduled substances. Frequently reported chemicals included:

- **2-Bromo-4'-methylpropiofenone**, a mephedrone precursor, which was seized in France, the Netherlands and Belgium (in descending order of amounts seized). Destination countries included the Netherlands, Spain and the United Kingdom. Where information about the origin was provided, China was identified as the suspected country of origin. Seizures in all countries totalled 60 kg.

³⁵Australian Criminal Intelligence Commission, *Illicit Drug Data Report 2017–18* (Canberra, July 2019).

- **2,5-Dimethoxybenzaldehyde**, a precursor for 2,5-dimethoxyamphetamine (DMA), brolamfetamine (DOB) and the 2C-series of controlled psychotropic substances, as well as for new psychoactive substances, reported by the Netherlands (5 kg) and Belgium (1 kg).
- **4-Methoxy-P-2-P**, a precursor of *para*-methoxy-*alpha*-methylphenethylamine (PMA) and *para*-methoxymethylamphetamine (PMMA), reported by Spain (52 kg).

226. Through PICS, incidents involving **2-bromo-4'-chloropropiophenone**, a precursor of various 4-chloro-substituted cathinone derivatives, such as 4-CMC (clephedrone), were communicated. Luxembourg seized 500 kg of the substance in August 2018. The consignment was confiscated because both the supplier and the consignee were already known in connection with shipments of other precursors of new psychoactive substances. It originated in India, transited Qatar, Luxembourg and Germany and was destined for a consignee in Poland. A consignment of 300 kg of the substance was confiscated by customs authorities in Germany in December 2018. The suspected destination was Poland. In April 2018, customs authorities in Czechia communicated a seizure of a consignment of 100 kg, which had originated in India and was destined for Czechia.

227. Incidents involving precursors of new psychoactive substances, in particular synthetic cathinones, also continued to occur and be communicated through PICS in 2019, by the Netherlands (120 kg) and Czechia (575 kg). Open media sources referred to a seizure of nearly 2.5 tons of 2-bromo-4'-methylpropiofenone in an illicit laboratory or warehouse in Taiwan Province of China.

228. **The Board commends countries that voluntarily report seizures of precursors of new psychoactive substances and substances recently scheduled under the 1971 and 1961 Conventions, as such reporting helps to identify emerging trends and establish links between cases, which often involve both scheduled and non-scheduled chemicals. To make the best possible use of available information and intelligence, all Governments are encouraged to communicate relevant incidents through PICS in real time.**

IV. Article 13 of the 1988 Convention as a complementary tool in addressing illicit drug manufacture

229. The clandestine manufacture of narcotic drugs and psychotropic substances, new psychoactive substances and precursors is not possible without the input of chemicals, materials and equipment. While the control of chemicals has long been a focus of the authorities worldwide, pursuant to the provisions in article 12 of the 1988 Convention, much less attention has been given to equipment and materials and article 13 of that Convention, which provides a basis for international action and cooperation in such control efforts (see box 5).

230. Concern about the use of equipment, including tableting machines, specialized glassware and other essential laboratory equipment, in illicit drug manufacture is not new, but the spread of fentanyl-related substances and other synthetic opioids, with their often high potency and their role in fatal overdose cases in some parts of the world, has raised new concerns among Governments and the Board.

231. As early as 1998, the General Assembly specifically requested national authorities to monitor sales of laboratory equipment, pursuant to article 13 of the 1988 Convention.³⁶ In 2002 and 2003, the Equipment Working Group of Project Prism convened two meetings in The Hague, Netherlands, and Bangkok to discuss the matter. As a tangible result, in 2004, the Europol Illicit Laboratory Comparison System was established. In 2010, the Inter-American Drug Control Commission developed a concept paper on the regulation of equipment used in the illicit manufacture of synthetic drugs. Calls to initiate equipment monitoring and investigations into seizures and cases of diversion or smuggling of essential equipment have since been made on several occasions, most recently in March 2019, by the Commission on Narcotic Drugs in its resolution 62/4.

232. The resolution calls on Governments to increase the operational use of article 13 and take appropriate measures to prevent trade in and the diversion of equipment used in

³⁶See General Assembly resolution S-20/4, which sets out the Action Plan against Illicit Manufacture, Trafficking and Abuse of Amphetamine-type Stimulants and Their Precursors.