Part four

STATISTICAL INFORMATION ON NARCOTIC DRUGS

Quatrième partie

RENSEIGNEMENTS STATISTIQUES SUR LES STUPÉFIANTS

Cuarta parte

INFORMACIÓN ESTADÍSTICA SOBRE ESTUPEFACIENTES

Note

1. The comments on reported statistics on narcotic drugs appearing in part four describe the trends of the 20-year period 1983-2002 in the production/manufacture, consumption, utilization and stocks of the main narcotic drugs under international control and, where applicable, poppy straw. Figures are presented on the main topics of interest.

2. The comments are complemented by an examination of issues affecting the supply of opiate raw materials and demand for opiates for licit requirements with a view to maintaining a lasting balance between the two. The examination is based on statistical data related to the cultivation of opium poppy, the production and utilization of opiate raw materials and the consumption of opiates, furnished by Governments in respect of 2002, as well as advance data for 2003 on opium poppy cultivation and production of opiate raw materials, submitted on a voluntary basis by the major producing countries and supplemented by the relevant estimates for 2004. The tables entitled "Production of opiate raw materials, demand for opiates and balance between the two, 1999-2004" provide, separately for opiates based on morphine and those based on thebaine, an overview of the global production of opiate raw materials, the demand for opiates and the balance between the two over the six-year period 1999-2004. The figures for the year 2003 are provisional and those for 2004 are projections based on the information available, including estimates furnished by Governments, and are therefore subject to revisions when appropriate. All figures related to production, utilization, consumption, trade and stocks are expressed in terms of morphine or thebaine equivalent, for ease of comparison.

3. The statistical tables included in part four show the actual movement of narcotic drugs and poppy straw, as applicable, for the five preceding years, except for the data on international trade and seizures, which refer to the preceding year only.

Note

1. Les observations concernant les statistiques communiquées sur les stupéfiants qui figurent dans la quatrième partie rendent compte de l'évolution, au cours des 20 années 1983-2002, de la production/fabrication, de la consommation, de l'utilisation et des stocks des principaux stupéfiants placés sous contrôle international et, où applicable, de la paille de pavot. Des figures illustrent les principaux sujets d'intérêt.

2. Ces observations sont complétées par une analyse des questions influant sur l'offre de matières premières opiacées et sur la demande d'opiacés pour les besoins licites, l'objectif étant de maintenir un équilibre durable entre les deux. Cette analyse s'appuie sur les statistiques relatives à la culture du pavot à opium, à la production et à l'utilisation de matières premières opiacées et à la consommation d'opiacés fournies par les gouvernements pour 2002, ainsi que sur les données préliminaires pour 2003 concernant la culture du pavot à opium et la production de matières premières opiacées qui ont été fournies par les principaux pays producteurs de leur propre initiative et complétées par les évaluations pertinentes pour 2004. Les tableaux intitulés "Production de matières premières opiacées, demande d'opiacés et écart entre les deux, 1999-2004" donnent, en faisant la distinction entre les opiacés de morphine et ceux à base de thébaïne, un aperçu de la production mondiale de matières premières opiacées, de la demande d'opiacés et de l'écart entre les deux sur une période de six ans (1999-2004). Les chiffres pour 2003 étant provisoires et ceux pour 2004 étant des projections établies à partir des informations disponibles, notamment des évaluations fournies par les gouvernements, ils pourront être modifiés s'il y a lieu. Tous les chiffres concernant la production, l'utilisation, la consommation, le commerce et les stocks sont exprimés en équivalent morphine ou thébaïne pour faciliter la comparaison.

3. Les tableaux statistiques figurant dans la quatrième partie montrent les mouvements effectifs de stupéfiants et de paille de pavot, selon les cas, pendant les cinq années précédentes, à l'exception des données concernant le commerce international et les saisies, qui ne concernent que l'année précédente.

Nota

1. En los comentarios relativos a las estadísticas comunicadas sobre los estupefacientes, que figuran en la cuarta parte, se describen las tendencias de la producción/fabricación, el consumo, la utilización y las existencias de los principales estupefacientes sujetos a fiscalización internacional y, en su caso, de la paja de adormidera en el período de 20 años comprendido entre 1983 y 2002.

2. Los comentarios se complementan con un examen de las cuestiones que afectan a la oferta de materias primas de opiáceos y a la demanda de opiáceos con fines lícitos con miras a mantener un equilibrio duradero entre ambas. Este examen se basa en estadísticas referentes al cultivo de la adormidera, la producción y utilización de materias primas de opiáceos y el consumo de opiáceos, facilitadas por los gobiernos con respecto al año 2002, y en los avances sobre el cultivo de adormidera y la producción de materias primas de opiáceos en el año 2003 presentadas voluntariamente por los principales países productores, y complementadas con previsiones al efecto para 2004. En los cuadros titulados "Producción de materias primas de opiáceos, consumo de opiáceos y diferencia entre ambos 1999 a 2004", se presenta por separado para los opiáceos basados en la morfina

y para los basados en la tebaína, la evolución de la producción mundial de materias primas de opiáceos, la demanda de opiáceos y la diferencia entre producción y consumo durante un período de seis años (1999 a 2004). Las cifras para el año 2003 son provisionales y las de 2004 son proyecciones basadas en la información disponible, incluidas las estimaciones facilitadas por los gobiernos, y están, por lo tanto, sujetas a eventuales revisiones. Para facilitar la consulta, todas las cifras relativas a la producción, la utilización, el consumo, el comercio y las existencias vienen expresadas en equivalente de morfina o de tebaína.

3. Los cuadros que figuran en esta parte muestran el movimiento de los estupefacientes y de la paja de adormidera, en su caso, durante los cinco años precedentes. Se exceptúan los datos relativos al comercio y las incautaciones internacionales que corresponden exclusivamente al año precedente.

COMMENTS ON THE REPORTED STATISTICS ON NARCOTIC DRUGS

1. The purpose of the present comments is to facilitate the study of the data presented in the tables of reported statistics (see pages 175-288 below) and to describe trends in the licit production, manufacture, consumption,[1] utilization[2] and stocks of, as well as trade in, opiate raw materials, the main opioids, including synthetic narcotic drugs under international control, and cannabis, coca leaf and cocaine.

2. The tables of reported statistics contain data submitted by Governments to the International Narcotics Control Board (INCB) in accordance with articles 19 and 20 of the Single Convention on Narcotic Drugs of 1961. The most recent statistical data reflected in these comments are those relating to the year 2002. The failure by some Governments to furnish reports, or to provide complete reports, complicates the analysis of data and may have a bearing on the accuracy of some of the information presented below.[3] The most pertinent conclusions and recommendations of the Board based on the analysis of statistical data are included in chapter II of its annual report.[4]

Opiate raw materials

3. Opium and poppy straw are the raw materials from which alkaloids, such as morphine, thebaine and codeine, are extracted for use by the pharmaceutical industry. These raw materials are obtained from the opium poppy plant (*Papaver somniferum*). Concentrate of poppy straw is a product obtained in the process of extracting alkaloids from poppy straw. It is controlled as a separate drug under the 1961 Convention.

4. The actual production of opiate raw materials in a given year is dependent on a number of factors of an economic and non-economic nature, ranging from weather conditions to the implementation of technological innovations in producing countries.

5. The demand for alkaloids has increased over the last 20 years. Poppy straw is the raw material that has mainly been used to cover that increase in demand. In 2002, approximately 80 per cent of the morphine and 90 per cent of the thebaine manufactured worldwide was obtained from poppy straw, while the rest was obtained from opium.

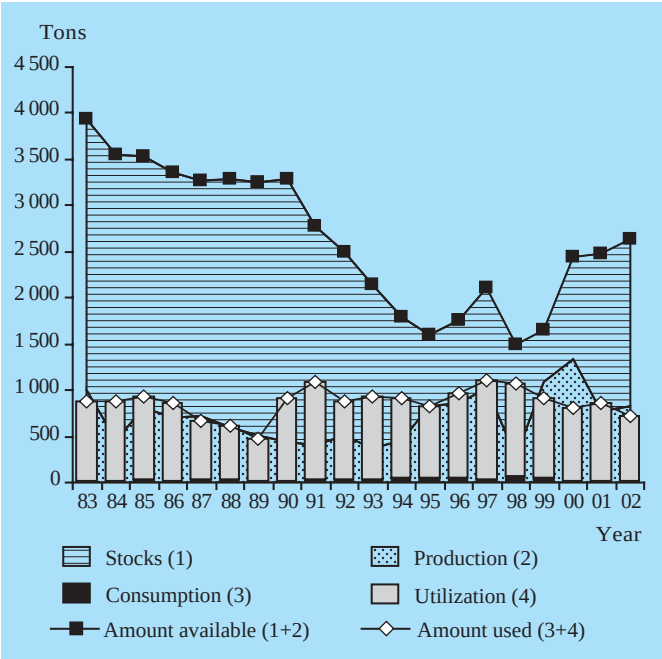
6. Details on trends in the production and use of opium and poppy straw as well as on the manufacture and use of concentrate of poppy straw, morphine, thebaine, codeine, oxycodone and the other relevant drugs are provided below. The current balance between the supply of opiate raw materials and the demand for opiates[5] for medical and scientific needs is examined in a separate section of the present publication (see pages 151-157). When appropriate, the data on opium and poppy straw are also expressed in morphine or thebaine equivalent[6] of the respective quantities in order to enable comparisons between the two opiate raw materials.

Opium

7. Opium raw material is the latex produced by making incisions on the green capsules of the poppy plant. The latex then turns into a dark, resinous material called raw opium. For statistical purposes and for purposes of comparison, data on the production of and trade in opium are reported at 10 per cent moisture content.

8. Figure 1 presents an overview of the situation with respect to licit production, stocks, consumption and utilization of opium during the 20-year period 1983-2002. Figure 1 shows for each year the total amount of opium available (initial stocks plus production) and the total amount of opium used (consumption plus utilization). Not included in the data on consumption, utilization and stocks is the amount of seized opium released for licit purposes.

Figure 1. Opium: global production, stocks,[a] consumption and utilization; amounts available and used, 1983-2002



[a]Stocks as at 1 January of a given year.

[1]For the purposes of the Single Convention on Narcotic Drugs of 1961, a drug is regarded as "consumed" when it has been supplied to any person or enterprise for retail distribution, medical use or scientific research; and "consumption" is construed accordingly (art. 1, para. 2).

[2]The parties shall furnish INCB with statistical returns on the utilization of narcotic drugs for the manufacture of other drugs, of preparations in Schedule III of the 1961 Convention and of substances not covered by the convention and on the utilization of poppy straw for the manufacture of drugs.

[3]Details on the submission of statistical reports by individual Governments are contained in part two of this publication (see pages 21-29).

[4]*Report of the International Narcotics Control Board for 2003* (United Nations publication, Sales No. E.04.XI.1).

[5]A definition of the term "opiate" is provided in paragraph 46 below.

[6]The morphine or thebaine equivalent is calculated by INCB on the basis of the actual industrial yield of the respective alkaloid obtained from opium or poppy straw.

9. India has been the main licit producer and sole supplier of opium to the world market for almost three decades. Opium exported from that country has a morphine concentration of 9.5-12 per cent. Codeine is present in Indian opium in a concentration of about 2.5 per cent and thebaine in concentrations ranging from 1 to 1.5 per cent. To a much lesser extent, the poppy plant is licitly cultivated for the production of opium also in China,[7] the Democratic People's Republic of Korea and Japan. While China and the Democratic People's Republic of Korea produce opium for use by their domestic pharmaceutical industry, Japan produces a very small quantity exclusively for preserving local know-how and traditional techniques. In some countries, illicitly produced opium seized from drug traffickers has been released for medical use or for the extraction of alkaloids (see para. 17 below).

10. The production of opium in India has fluctuated considerably from year to year over the last two decades. Opium production gradually decreased from 997 tons in 1983 to 346 tons in 1993, after which it was on the rise, except in 1998, when there was an exceptionally bad harvest. In 2000, production reached almost 1,330 tons, the highest level in the last two decades. Production declined to 774 tons in 2001 and increased slightly to 821 tons (or 90 tons of morphine equivalent) in 2002.

11. The extent of opium production in India has been dependent not only on considerations of an economic nature, such as the demand for opium, but also on considerations of a social nature, since the production of opium provides subsistence for a significant number of families of farmers. The quantities of opium produced that were not used in India or exported have been added to stocks. The stocks of opium were at a level of more than 2,000 tons until 1989, but declined afterwards to less than 370 tons in 1994. Since that year, the stocks have tended to increase, exceeding 1,400 tons in 2000 and amounting to more than 1,700 tons in 2002 (or 188 tons of morphine equivalent; see also para. 19 below). Figure 2 shows the production and the stocks of opium in India expressed in terms of the morphine equivalent of opium.

12. Most of the opium produced in India is destined for export. Exports by India over the last 20 years have fluctuated between about 400 tons and 790 tons, averaging less than 600 tons per annum. Exports have been declining since 1998, when they amounted to 748 tons, to only 459 tons (or 50.5 tons of morphine equivalent) in 2002, the lowest quantity exported since 1989.

13. In recent years, the main importers of opium from India have been Japan and the United States of America, together accounting for more than 90 per cent of all imports. Imports by the United States fluctuated between 375 tons and 575 tons in the period 1993-2001, averaging 466 tons annually (see figure 3). In 2002, the United States imported 352 tons of Indian opium, the lowest quantity in the last decade, accounting for 75 per cent of worldwide opium imports. Imports by Japan during the last decade were stable (104 tons on annual average). In 2002, Japan imported almost 108 tons of opium from India (23 per cent of worldwide opium imports). France (5 tons), Thailand (1.5 tons) and Germany (1 ton) were the only other countries reporting significant imports of opium from India in 2002. The United Kingdom of Great Britain and Northern Ireland imported 20 tons of opium from India in 2000 but reported no imports afterwards.

Figure 2. Opium: production and stocks in India, in morphine equivalent, 1983-2002

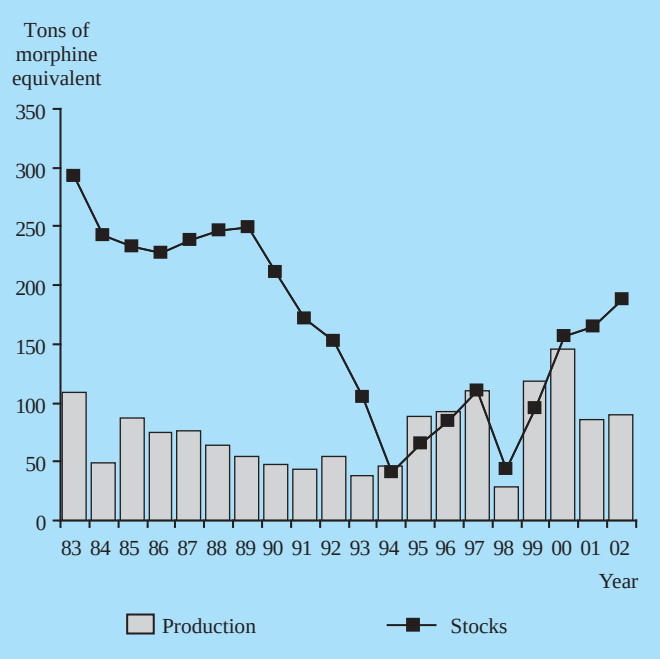
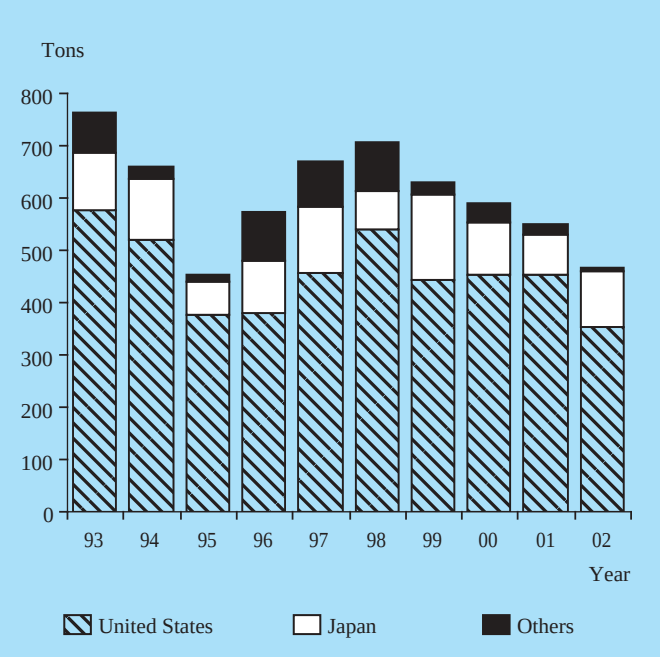


Figure 3. Opium: imports by the main importers and others, 1993-2002



14. Opium production in China gradually increased, from less than 6 tons in 1983 to a record level of 23 tons in 1994, and remained above 20 tons until 1997. It then dropped to 16.5 tons in 1998 and declined further to 3.7 tons in 2001. No opium was produced in China in 2002. The decline was the result of the increasing use in China of poppy straw as opiate raw material. The move from opium to poppy straw,

[7] Data for China do not include statistics relating to the Hong Kong Special Administrative Region, the Macao Special Administrative Region or Taiwan Province of China.

which started in 1998, was mainly attributable to the high costs of lancing, which is a labour-intensive process. During the last decade, the Democratic People's Republic of Korea only once furnished statistical information on opium production (368 kilograms (kg) in 2001). In Japan, annual opium production has been maintained at the level of a few kilograms in recent years.

15. Limited amounts of opium are consumed for medical purposes (see para. 18 below) while the bulk of it is used for the extraction of alkaloids. As shown in figure 4, the total amount of licitly produced opium used worldwide for the extraction of alkaloids averaged 865 tons per annum in the period 1983-1986. It gradually declined to 432 tons in 1989, but increased again to a peak of 997 tons in 1991. While utilization fell in the following four years, it rose again in 1996 and 1997 (928 tons, owing in part to the increasing demand for thebaine), but then declined continuously to 611 tons in 2001. In 2002, the use of opium increased by more than 10 per cent to 679 tons (or 75 tons of morphine equivalent). The United States, India and Japan were the main processors of opium from licit production during the last decade, using 439 tons (65 per cent of global utilization), 129 tons (19 per cent) and 104 tons (15 per cent) in 2002, respectively, for the extraction of alkaloids. The three countries together accounted for almost 99 per cent of the global utilization of licitly produced opium in 2002 (see figure 5). The only other country reporting the use of a significant quantity of opium for the extraction of alkaloids in 2002 was France, where 8.3 tons were used for that purpose.

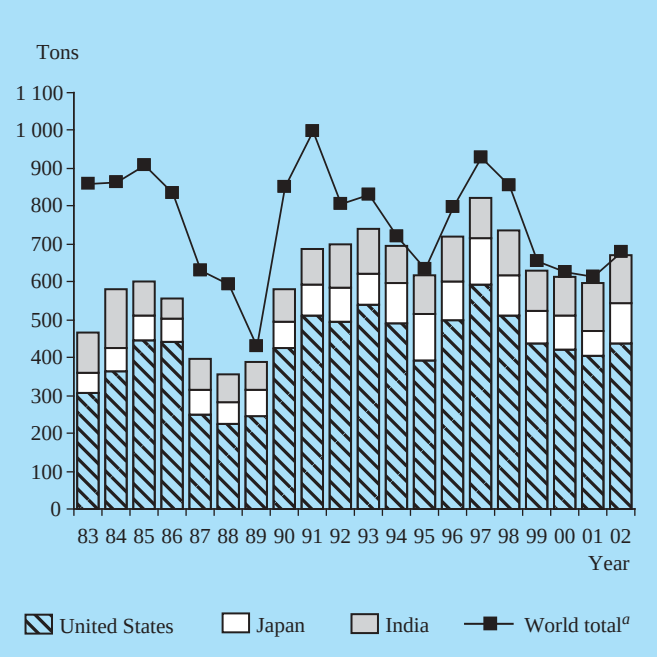
16. The former Union of Soviet Socialist Republics used large quantities of opium imported from India (almost 141 tons in 1991) for the extraction of alkaloids. The Russian Federation last reported such use in 1993 (50 tons). Hungary, which used a total of 116 tons of Indian opium for the extraction of alkaloids in the period 1996-1998, has reported no such use since then. The United Kingdom, which used 119 tons of Indian opium for the same purpose in the period 1996-1999, has reported no such use since 1999. In China, utilization of opium produced in that country has dropped sharply since 1996 and 1997, when it averaged 17.8 tons per annum, to 1.6 tons in 2001. No extraction of alkaloids from opium was reported by China in 2002.

17. In the Islamic Republic of Iran, seized opium has been released in large quantities for licit purposes since 1989. The quantities involved have gradually increased from 25 tons in 1989 to reach a record level of 231 tons in 2001. In 2002, only 30.6 tons of seized opium was released for licit purposes because of a sharp decline in seizures and deterioration in the quality of most of the opium seized. The yield of alkaloids extracted from seized opium is usually much less than from licitly produced opium. Myanmar, which utilized seized opium for the extraction of alkaloids at an average of 2 tons per annum prior to 1994, has not reported any utilization of seized materials since then.

18. Opium is used in the medical treatment of diarrhoea and as a cough suppressant. More than 90 per cent of it is consumed in the form of preparations included in Schedule III of the 1961 Convention.[8] Global use of opium for medical purposes increased from 18 tons in 1990 to an annual average of more than 54 tons in the period 1994-1999. Global use dropped to an annual average of 15.3 tons in 2000-2002. That decline was the result of a significant reduction in the use of opium in China for the manufacture of preparations in Schedule III of the 1961 Convention. While China reported the use of almost 43 tons of opium for that purpose in 1999, using quantities of opium released from special stocks, only 6 tons of opium were used for the manufacture of preparations in Schedule III in 2002. Instead, China began to use concentrate of poppy straw as the starting

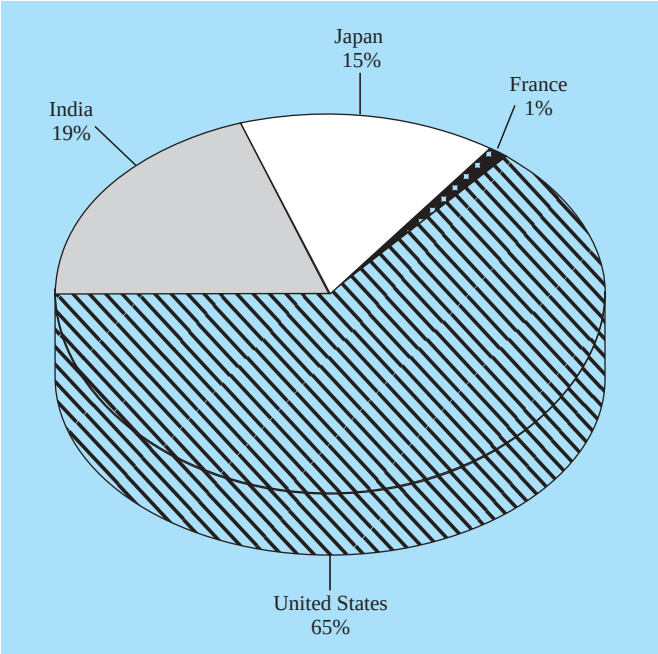
[8]Preparations included in Schedule III of the 1961 Convention are exempted from several control measures that are otherwise mandatory for preparations containing narcotic drugs, including reporting on their consumption and international trade.

Figure 4. Opium: utilization for the extraction of alkaloids, 1983-2002



[a]Excluding the Islamic Republic of Iran and Myanmar.

Figure 5. Opium utilization: shares of the main users, 2002



material for the manufacture of preparations in Schedule III, replacing the preparations of opium. In spite of those changes, China remained with 6.1 tons the main consumer of opium for medical purposes in 2002, followed by India, with 5.1 tons. Other countries reporting consumption of opium or its use for the manufacture of preparations in Schedule III in quantities of more than 100 kg in 2002 were, in descending order, France (2.9 tons), the United States (278 kg), Indonesia (236 kg), Germany (159 kg), Sri Lanka (138 kg), South Africa (113 kg) and Norway (100 kg).

19. The global stocks of opium amounted to 1,932 tons in 2002 (214 tons of morphine equivalent) of which 1,706 tons (88 per cent) were held by India. The other countries holding stocks of more than 1 ton were, in descending order, Japan (150 tons), the United States (46.9 tons), the United Kingdom (18.9 tons), France (5.3 tons) and Germany (1.7 tons). In 2002, opium production in India was higher than the worldwide use of licitly produced opium for the fourth consecutive year. The quantity held in stocks in India at the end of 2002 was almost the same as the combined domestic use in and exports from India of opium in the three-year period 2000-2002.

Poppy straw

20. Poppy straw consists of all parts of the opium poppy after mowing except the seeds. It is now the principal raw material used for the extraction of morphine and thebaine. Normally, morphine is the predominant alkaloid found in the varieties of opium poppy cultivated in all major producing countries. Commercial cultivation of opium poppy with a high thebaine content started in Australia and France in the second half of the 1990s in response to the sharply increasing demand for this alkaloid. In the present publication, poppy straw produced from varieties of opium poppy rich in morphine is referred to as "poppy straw (M)" and poppy straw produced from varieties of opium poppy rich in thebaine is referred to as "poppy straw (T)".

Poppy straw produced from opium poppy rich in morphine (poppy straw (M))

21. The concentration of morphine in poppy straw varies significantly among producing countries. Therefore, the comparison of production levels of poppy straw among those countries and the identification of global trends in its production are only possible by use of a common denominator. The common denominator applied by INCB for that purpose is the morphine equivalent of the quantity of poppy straw produced in each country, calculated on the basis of the actual industrial yields of morphine obtained from poppy straw produced in that country.

22. Global production of poppy straw (M) followed a steadily increasing trend, growing from an average level of about 120 tons of morphine equivalent in the years 1983-1985 to an average of about 245 tons in the period 1999-2001. In 2002, global production increased significantly, to a record level of about 380 tons of morphine equivalent.

23. Four countries, Australia, France, Spain and Turkey, together accounted for more than 90 per cent of global production of poppy straw (M) during the last two decades. The increase in global production has been a result of both an increase in quantities of poppy straw harvested in the main producing countries as well as in the industrial yield of morphine obtained from that poppy straw. Between the periods 1983-1985 and 2000-2002, the average production of poppy straw increased in Australia from 4,200 tons to 10,060 tons, in France from 3,520 tons to 4,300 tons, in Spain from 1,780 tons to 4,300 tons and in Turkey from 5,670 tons[9] to 16,840 tons. Between the same time periods, the average industrial yield of anhydrous morphine alkaloid obtained from poppy straw increased in Australia from 1.05 per cent to 1.35 per cent, in France from 0.58 per cent to 1.09 per cent, in Spain from 0.87 per cent to 1.13 per cent and in Turkey from 0.24 per cent to 0.32 per cent.

24. In 2002, the production of poppy straw (M) was above the average production of the last three years in all four main producing countries. It amounted to 12,639 tons in Australia, 5,723 tons in France, 6,213 tons in Spain and 17,500 tons in Turkey. The highest industrial yield was achieved in Australia (1.35 per cent), followed by France (1.18 per cent), Spain (1.08 per cent) and Turkey (0.32 per cent). Figure 6 shows the main producing countries' shares of global production of poppy straw in 2002 based on the morphine equivalent of the quantities produced. Australia was the leading producer in 2002, accounting for 42 per cent of global production expressed in morphine equivalent; it was followed by France (17 per cent), Spain (16 per cent) and Turkey (14 per cent). Other countries reporting production of poppy straw for the manufacture of morphine in 2002 were China, Hungary, Slovakia and the former Yugoslav Republic of Macedonia, which together accounted for about 11 per cent of global production. Poppy straw (M) was also produced for the extraction of alkaloids in the United Kingdom, but the relevant statistics have not yet been furnished to INCB.[10]

25. International trade in poppy straw (M) was limited in recent years. Spain was the only major producing country that exported significant quantities of poppy straw (M) in 2001 (1,088 tons) and 2002 (1,415 tons, corresponding to 23 per cent of the quantity produced in Spain during that year). The countries importing poppy straw (M) from Spain were France and the United Kingdom. In addition, the Czech Republic and Yugoslavia[11] cultivated opium poppy primarily for the production of seeds, producing poppy straw as a by-product and exporting it to Slovakia and the former Yugoslav Republic of Macedonia, respectively, where it was used for the extraction of alkaloids. The concentration of morphine in such poppy straw is significantly lower than in poppy straw obtained from opium poppy cultivated for the production of alkaloids. In 2002, Slovakia imported 4,200 tons of poppy straw from the Czech Republic and the former Yugoslav Republic of Macedonia 160 tons from Yugoslavia.

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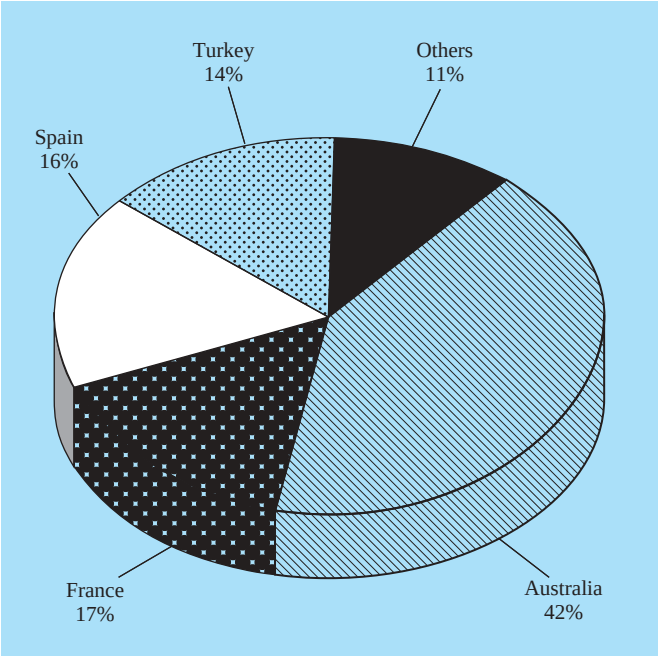
[9] In Turkey, the production of poppy straw was significantly lower than its utilization in the manufacture of alkaloids during the 1980s, since the country used the stocks of poppy straw that had accumulated prior to 1982, the year in which the industrial facilities for the extraction of alkaloids were put into operation. In the period 1983-1985, 11,610 tons of poppy straw were used per annum on average for the extraction of alkaloids in Turkey.

[10] Information on the position of INCB with respect to the cultivation of opium poppy for the manufacture of narcotic drugs in the United Kingdom can be found in the report of INCB for 2002 (United Nations publication, Sales No. E.03.XI.1), paragraphs 159-162.

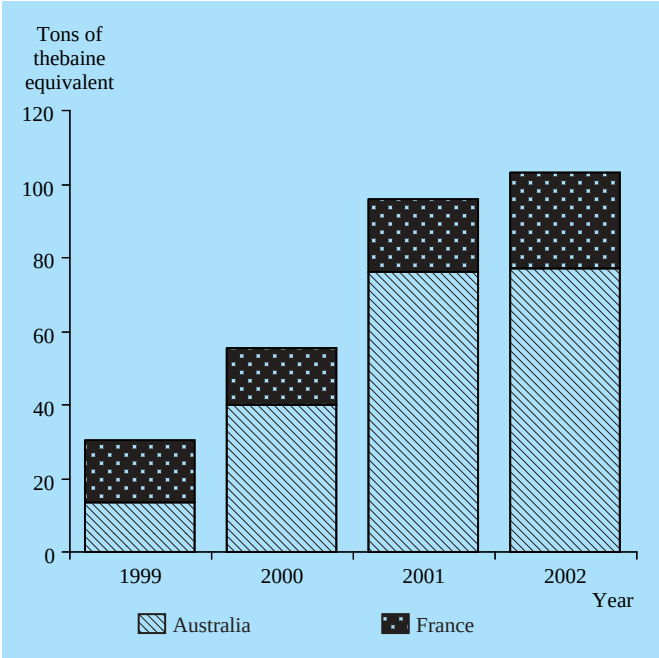
[11] Following the adoption and promulgation of the Constitutional Charter of Serbia and Montenegro by the Assembly of the Federal Republic of Yugoslavia on 4 February 2003 and earlier by the Republic of Serbia and Montenegro, the name of the State of the Federal Republic of Yugoslavia was changed to "Serbia and Montenegro".

Figure 6. Poppy straw (M):[a] global production in morphine equivalent, shares of the main producers, 2002



[a]Poppy straw produced from opium poppy rich in morphine.

Figure 7. Poppy straw (T):[a] production in Australia and France, in thebaine equivalent, 1999-2002



[a]Poppy straw produced from opium poppy rich in thebaine.

26. In 2002, the quantity of poppy straw (M) utilized for the extraction of alkaloids amounted to 9,395 tons in Australia, 5,125 tons in France, 2,427 tons in Spain and 17,781 tons in Turkey. The other countries reporting utilization of poppy straw (M) for the extraction of alkaloids in 2002 were China (247 tons), Hungary (1,539 tons), Slovakia (4,084 tons; see para. 25 above) and the former Yugoslav Republic of Macedonia (240 tons). Information on the quantities of alkaloids obtained from poppy straw (M) in 2002 in the above-mentioned countries is contained in paragraphs 36 and 51 below. Poppy straw (M) was probably also used for the extraction of alkaloids in the United Kingdom, but the relevant statistics have not yet been furnished to INCB.

Poppy straw produced from opium poppy rich in thebaine (poppy straw (T))

27. Australia and France started to report to INCB on the production of poppy straw with a high thebaine content (poppy straw (T)) in 1999. In Australia, the production of poppy straw (T) then increased very sharply, from about 1,800 tons in 1999 to more than 9,100 tons in 2002. In France, the production of such poppy straw fluctuated: it was more than 1,900 tons in 1999 but declined to about 1,250 tons in 2001 before increasing again to more than 2,500 tons in 2002. In the period 1999-2002, the industrial yield of anhydrous thebaine alkaloid obtained from poppy straw (T) averaged 0.91 per cent in Australia and 0.93 per cent in France. An overview of the production of poppy straw (T) in Australia and France in the period 1999-2002, expressed in thebaine equivalent, is presented in figure 7.

28. All poppy straw (T) produced in Australia and France is used in those countries for the extraction of alkaloids. The quantity used in Australia increased sharply, from about 1,380 tons in 1999 to 5,135 tons in 2002. In France, the quantity of poppy straw (T) used for the extraction of alkaloids was relatively stable, averaging 1,415 tons per annum in the period 1999-2002. Information on the quantities of alkaloids obtained from poppy straw (T) is contained in paragraphs 42 and 45 below.

29. China produced 3 tons of poppy straw (T) for the first time in 2002 and used it for the extraction of alkaloids.

Poppy straw used for decorative purposes

30. In some countries, poppy straw is used for decorative purposes. Hungary and Austria were the main exporters of poppy straw for such purposes in 2002, reporting exports of about 33 tons and 21 tons, respectively. The main importers in 2002 were the Netherlands (35 tons) and Germany (about 21 tons).

Concentrate of poppy straw

31. Most countries using poppy straw for the extraction of alkaloids first manufacture an intermediary product called concentrate of poppy straw. Only Hungary and Slovakia report the direct manufacture of alkaloids from poppy straw in a continuous process.

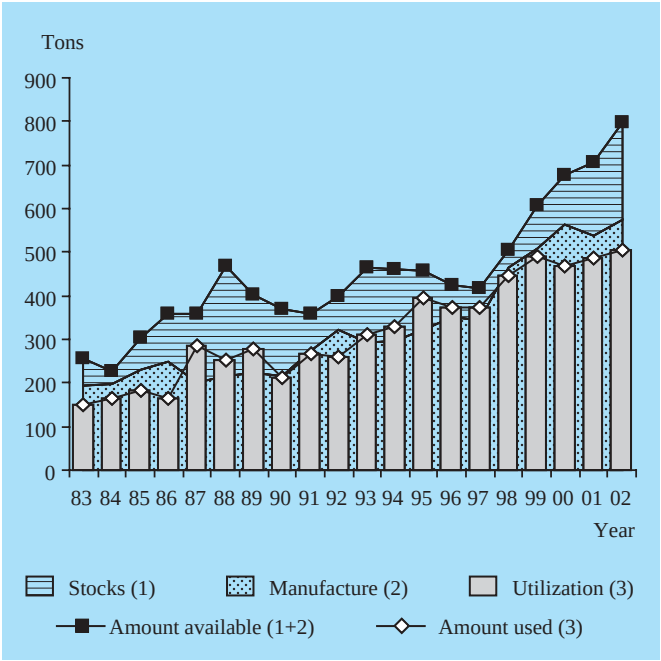
32. Concentrate of poppy straw is the dried residue of alkaloids obtained through extraction and concentration from poppy straw. Until the second half of the 1990s, only concentrate of poppy straw containing morphine as the main alkaloid was manufactured. Since then, Australia and France have started to manufacture concentrate of poppy straw containing mainly thebaine and Australia has started to manufacture concentrate of poppy straw containing mainly oripavine. Oripavine is an alkaloid that is not under international control but is also obtained from some varieties of

opium poppy rich in thebaine. Oripavine is used for the manufacture of thebaine. In the present publication, concentrate of poppy straw containing morphine as the main alkaloid is referred to as "concentrate of poppy straw (M)", concentrate of poppy straw containing thebaine as the main alkaloid is referred to as "concentrate of poppy straw (T)" and concentrate of poppy straw containing oripavine as the main alkaloid is referred to as "concentrate of poppy straw (O)". The actual content of alkaloids in concentrate of poppy straw may vary significantly; however, for purposes of comparison and for statistical purposes, in the present publication all quantities are expressed in terms of 50 per cent content of the main alkaloid.[12]

Concentrate of poppy straw containing morphine as the main alkaloid (concentrate of poppy straw (M))

33. An overview of the situation with respect to manufacture, stocks and utilization of concentrate of poppy straw containing morphine as the main alkaloid (concentrate of poppy straw (M)) during the 20-year period 1983-2002 is presented in figure 8. That figure shows for each year the total amount of concentrate of poppy straw available (initial stocks plus manufacture) and the total amount utilized.

Figure 8. Concentrate of poppy straw (M):[a] global manufacture, stocks[b] and utilization, 1983-2002

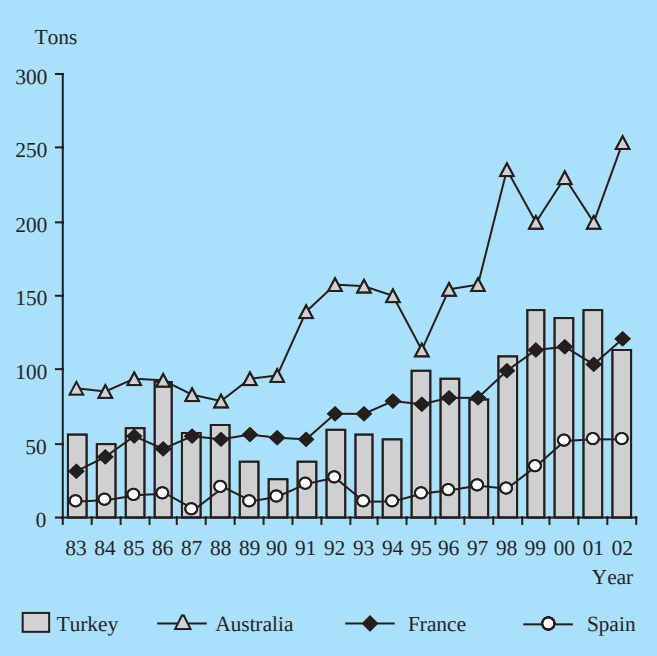


[a]Concentrate of poppy straw containing morphine as the main alkaloid.
[b]Stocks as at 1 January of a given year.

34. Global manufacture of concentrate of poppy straw (M) has followed a generally upward trend during the last two decades. It was relatively stable in the period 1983-1990, averaging 215 tons per annum, but increased considerably to 322 tons in 1992. While it stabilized during the next five years at an average level of 320 tons per annum, it increased rapidly starting in 1998, reaching an all-time high of 590 tons (or 295 tons expressed in terms of the anhydrous morphine alkaloid) in 2002.

[12]In addition to the main alkaloid, the concentrate of poppy straw usually also contains other alkaloids that may be obtained in the process of the extraction of alkaloids from poppy straw.

Figure 9. Concentrate of poppy straw (M):[a] manufacture in the main manufacturing countries, 1983-2002



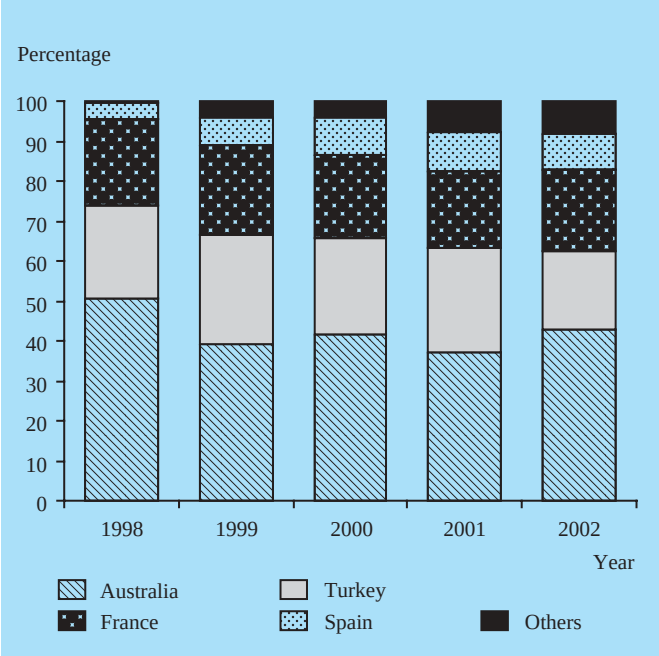
[a]Concentrate of poppy straw containing morphine as the main alkaloid.

35. Australia, France, Spain and Turkey, the main producers of poppy straw (M), were also the principal manufacturers of concentrate of poppy straw (M). Figure 9 provides an overview of developments in the manufacture of concentrate of poppy straw (M) in the main manufacturing countries in the period 1983-2002. Australia was the leading manufacturer during that entire period and Turkey the second largest manufacturer until 1988 and then again from 1995 to 2001. France was the second largest manufacturer from 1989 to 1994 and in 2002. Between the periods 1983-1985 and 2000-2002, the average annual manufacture of concentrate of poppy straw (M) increased more than 2.5 times in Australia, 2.7 times in France, 4.2 times in Spain and 2.3 times in Turkey.

36. In 2002, Australia manufactured 254 tons of concentrate of poppy straw (M), increasing its manufacture against the previous year by almost 27 per cent. France manufactured 121 tons (16 per cent more than in 2001), while the manufacture in Turkey declined to 114 tons (19 per cent less than in 2001). The manufacture in Spain was 53 tons, almost the same as in the previous year. As shown in figure 10, those countries together accounted for almost 92 per cent of global manufacture. The only other countries reporting manufacture of concentrate of poppy straw (M) in 2002 were Hungary (26.4 tons), China (20.8 tons) and the former Yugoslav Republic of Macedonia (1.6 tons). The manufacture of concentrate of poppy straw has probably also taken place in the United Kingdom (see paras. 24 and 26 above), but statistics on that manufacture have not yet been furnished to INCB.

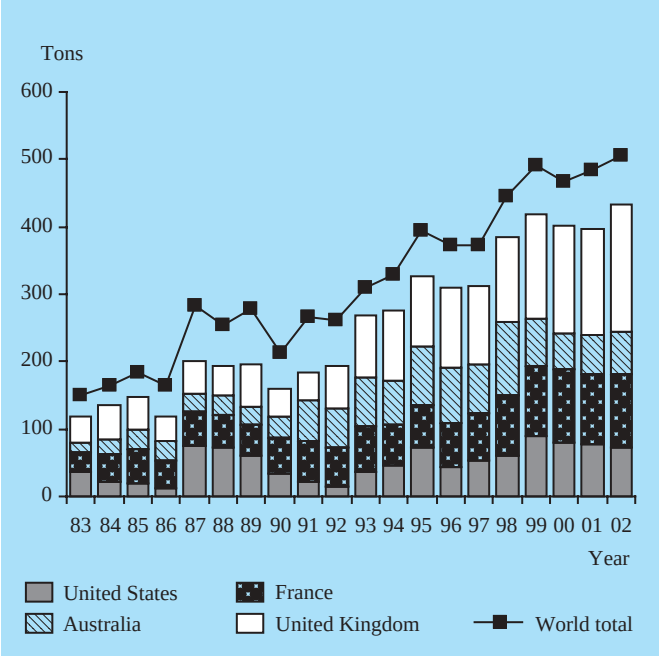
37. Global exports of concentrate of poppy straw (M) averaged 100 tons in the years 1983-1985. They increased to 203.5 tons in 1993 and reached a record level of almost 328 tons in 1999. After a decline in the following two years, exports rose to 326 tons in 2002. Australia has been the

Figure 10. Concentrate of poppy straw (M):[a] shares of the main manufacturing countries, 1998-2002



[a]Concentrate of poppy straw containing morphine as the main alkaloid.

Figure 11. Concentrate of poppy straw (M):[a] global utilization for the manufacture of opiates, 1983-2002



[a]Concentrate of poppy straw containing morphine as the main alkaloid.

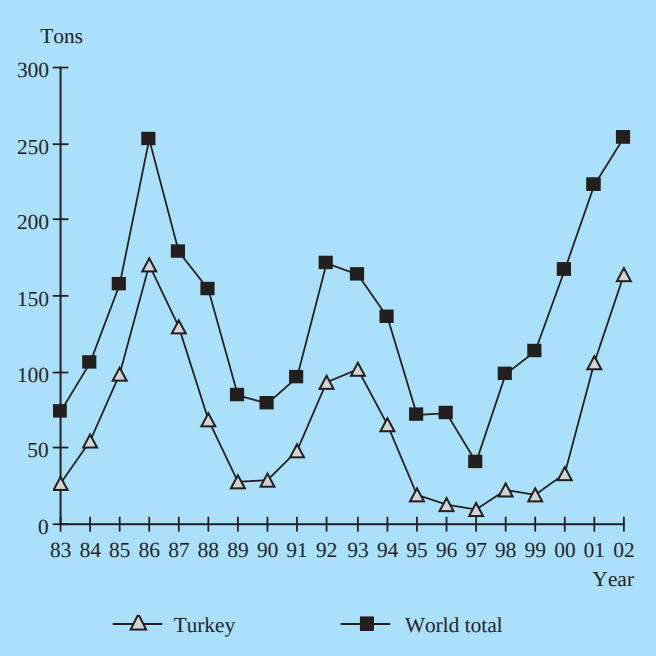
leading exporter, increasing its exports during the last decade from 94 tons in 1993 to a peak level of 183 tons in 2002, when it accounted for 56 per cent of global exports. Turkey has been the second largest supplier of concentrate of poppy straw (M), its exports averaging 113 tons annually in the period 1998-2000. In 2001, exports from Turkey dropped sharply to 60 tons and declined further to 52 tons in 2002 (16 per cent of global exports). Exports by Spain have been continuously increasing, from 6.1 tons in 1997 to 46.4 tons in 2002 (14 per cent of global exports). Also sharply increasing were exports by Hungary, growing from 10 tons in 2000 to 28.2 tons in 2002 (less than 9 per cent of global exports). France exported 12.9 tons in 2002 (4 per cent of global exports), a quantity four times higher than in 2000 but less than the exports in the mid-1990s, which mounted to 21.4 tons in 1996.

38. The United Kingdom and the United States have been the leading importers of concentrate of poppy straw (M). Imports by the United Kingdom increased significantly, from an annual average of less than 70 tons in the period 1991-1996 to an annual average of about 140 tons in the period 1997-2000. In 2002, the United Kingdom imported almost 186 tons, accounting for 59 per cent of global imports. Imports by the United States were relatively stable from 1993 to 1997, at a level of less than 50 tons per annum; they rose sharply to a record level of 112 tons in 1999 but dropped back to about 71 tons in the following two years. Imports declined to 51.3 tons in 2002 (16 per cent of global imports), while the stocks held in the country were reduced by more than 20 tons. The other countries reporting imports of more than 1 ton in 2002 were South Africa (16.8 tons), Norway (16.4 tons), the Islamic Republic of Iran (14.5 tons), the Netherlands (12 tons), Japan (7.6 tons), Switzerland (3.2 tons, for re-export), Italy (3.2 tons), Slovakia (2 tons) and the former Yugoslav Republic of Macedonia (1.4 tons). Slovakia started to import concentrate of poppy straw (M) in 1998, Japan in 1999 and the Islamic Republic of Iran in 2002, following a significant reduction in the use of seized opiates for the extraction of alkaloids in that country (see para. 17 above).

39. Concentrate of poppy straw (M) is used as an intermediary product for the manufacture of morphine. In addition, it is also used in continuous manufacturing processes for the manufacture of other alkaloids, such as codeine, into which morphine contained in the concentrate is converted. Utilization of concentrate of poppy straw (M) for the manufacture of alkaloids has increased constantly over the last two decades (see figure 11), reflecting the growing demand for morphine and its conversion products. The total amount utilized increased from 150 tons in 1983 to 284 tons in 1987, then stagnated but started to grow again from 1993, reaching the record level of 520 tons (or 260 tons of anhydrous morphine alkaloid) in 2002.

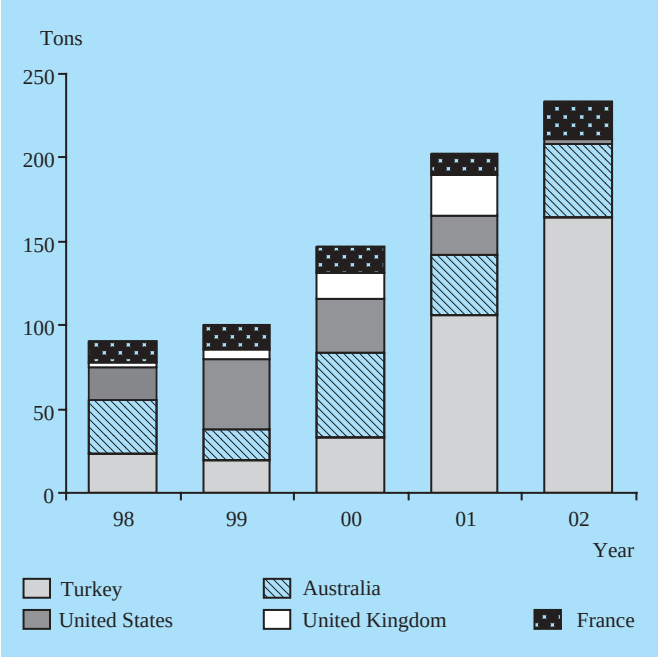
40. As shown in figure 11, Australia, France, the United Kingdom and the United States have been the four main users of concentrate of poppy straw (M) for the extraction of alkaloids. During the period 1993-2002, utilization of concentrate of poppy straw (M) for that purpose grew very rapidly in France and the United Kingdom. In Australia, it increased sharply to a record level of 109 tons in 1998 but then dropped by almost one half. In the United States, the quantity used for that purpose reached an all-time high in 1999 (almost 90 tons) but declined in the following three years. In 2002, the United Kingdom used the largest quantity (188.1 tons, or 36.2 per cent of global utilization); it was followed by France (108.8 tons, or 20.9 per cent of global utilization), the United States (71.8 tons, or 13.8 per cent of global utilization) and Australia (63.5 tons, or 12.2 per cent of global utilization). Those four countries together accounted for more than 83 per cent of the total quantity utilized in 2002. Other countries reporting

Figure 12. Concentrate of poppy straw (M):[a] stocks, world total and Turkey, 1983-2002



[a]Concentrate of poppy straw containing morphine as the main alkaloid.

Figure 13. Concentrate of poppy straw (M):[a] stocks in Australia, France, Turkey, the United Kingdom and the United States, 1998-2002



[a]Concentrate of poppy straw containing morphine as the main alkaloid.

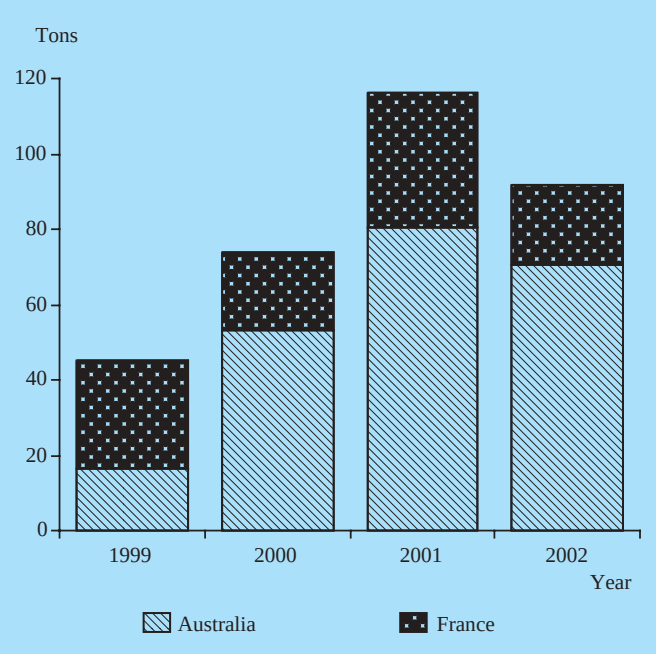
significant use of concentrate of poppy straw (M) for the extraction of alkaloids in 2002 were China (20 tons), South Africa (16.9 tons), Norway (16.6 tons), the Islamic Republic of Iran (13.6 tons), Spain (3.7 tons), Japan (3 tons), Turkey (3.5 tons), the former Yugoslav Republic of Macedonia (3 tons), the Netherlands (2.9 tons), Italy (2.9 tons) and Slovakia (2 tons).

41. Global stocks of concentrate of poppy straw (M) fluctuated during the 20-year period 1983-2002 (see figure 12). Having fallen to 41 tons by the end of 1997, stocks began to rise rapidly, increasing more than sixfold to 253 tons (or 126.5 tons of anhydrous morphine alkaloid) in 2002. Turkey held the largest stocks in 2002 (164 tons, accounting for 64.7 per cent of global reported stocks). The stocks in that country increased very rapidly, from only 33 tons in 2000. The stocks in Australia amounted to 43.9 tons (17 per cent of global stocks). The other countries holding important stocks in 2002 were France (22.2 tons), Spain (7.7 tons), Japan (5.1 tons), Hungary (4 tons), the United States (2.8 tons) and Norway (2.4 tons) (see figure 13). In 2001, the United Kingdom held stocks of almost 24 tons; statistics on stocks for 2002 have not yet been received by INCB.

Concentrate of poppy straw containing thebaine as the main alkaloid (concentrate of poppy straw (T))

42. The manufacture of concentrate of poppy straw containing thebaine as the main alkaloid (concentrate of poppy straw (T)) was first reported by Australia in 1998 (3.6 tons). Global manufacture amounted to 45.2 tons in 1999 and increased very rapidly to 116.4 tons in 2001. In 2002, the manufacture declined to 91.8 tons (or 45.9 tons of anhydrous thebaine alkaloid) (see figure 14), in line with the reduced demand for the alkaloid. Australia and France were the only countries reporting such manufacture until 2002, when China reported for the first time the manufacture of a small quantity (132 kg). In 2002, manufacture in Australia amounted to 70.5 tons (a decrease of more than 12 per cent over the previous year) and in France to 21.2 tons (a decline of 40 per cent over 2001).

Figure 14. Concentrate of poppy straw (T):[a] manufacture in Australia and France, 1999-2002



[a]Concentrate of poppy straw containing thebaine as the main alkaloid.

43. Australia and France exported most of the concentrate of poppy straw (T) that they manufactured. The United States was the main importer, increasing its imports from 19.2 tons in 1999 to 102.4 tons in 2001, but reducing them sharply to less than 38 tons in 2002. In 2001, Spain reported such imports for the first time (8.1 tons) and imported almost the same quantity (7.8 tons), also in 2002.

44. Concentrate of poppy straw (T) is used as an intermediary product for the manufacture of thebaine. Its global utilization for that purpose rose very sharply, from 14.8 tons in 1999 to 108.5 tons in 2001, but declined by more than 35 per cent to 70.1 tons (or 35.05 tons of anhydrous thebaine alkaloid) in 2002. The United States had been the main user, accounting in 2002 with 51 tons for 73 per cent of global utilization; it was followed by Australia (9 tons), Spain (8.8 tons), France (1.1 tons) and China (144 kg). Stocks of concentrate of poppy straw (T) have been increasing constantly: from 2001 to 2002, they rose by more than 58 per cent to 65 tons (or 32.5 tons of anhydrous thebaine alkaloid), of which 44 per cent (28.5 tons) were held in Australia, 35 per cent (22.9 tons) in France and 21 per cent (13.6 tons) in the United States.

Concentrate of poppy straw containing oripavine as the main alkaloid (concentrate of poppy straw (O))

45. Since 1999, Australia has reported manufacture of concentrate of poppy straw containing oripavine as the main alkaloid (concentrate of poppy straw (O)). Manufacture of that concentrate increased from 10.3 tons in 1999 to 41 tons in 2001 and declined to 29 tons (or 14.5 tons of anhydrous oripavine alkaloid) in 2002. In Australia, the concentrate is used for the manufacture of thebaine or is exported to the United States, where it is used for the same purpose. Global utilization of concentrate of poppy straw (O) grew from 5.7 tons in 1999 to 40.5 tons in 2001 and then declined to 26.7 tons (or 13.35 tons of anhydrous oripavine alkaloid) in 2002. Of the total quantity used in 2002, 19.7 tons were used in Australia (an increase of 6 per cent compared with the previous year) and 7 tons were used in the United States (only one third of the quantity used in 2001). Global stocks of concentrate of poppy straw (O) increased from 3.7 tons in 1999 to 17.1 tons (or 8.55 tons of anhydrous oripavine alkaloid) in 2002. The United States held 70 per cent of global stocks in 2002 and Australia held the rest.

Opiates and opioids

46. "Opiate" is the term generally used to designate drugs derived from opium and their chemically related derivatives, such as the semi-synthetic alkaloids, while "opioid" is a more general term for both natural and synthetic drugs with morphine-like actions, although the chemical structure may differ from that of morphine. From a clinical point of view, the opioids may be classified according to their actions compared with those of morphine: similar affinity (agonist), competitive (antagonist) or mixed (agonist/antagonist) for the same receptor sites (the so-called opioid receptors) in the central and peripheral nervous system.

47. Opioids are used mostly for their analgesic properties to treat severe pain (fentanyl, hydromorphone, methadone, morphine and pethidine), moderate to severe pain (oxycodone) and mild to moderate pain (codeine, dihydrocodeine and dextropropoxyphene), as well as to induce or supplement anaesthesia (fentanyl, fentanyl analogues such as alfentanil and remifentanil). They are also used as cough suppressants (codeine, dihydrocodeine and, to a lesser extent, pholcodine and ethylmorphine), to treat gastrointestinal disorders, mainly diarrhoea (codeine and diphenoxylate), and in the treatment of addiction to opioids (buprenorphine, a substance under the control of the Convention on Psychotropic Substances of 1971, and methadone). Certain analgesic opioids, such as hydrocodone or oxycodone, are compounded in mixtures with non-opiate drugs to provide analgesic action (analgesic-antipyretic preparations).

Natural alkaloids

48. Morphine, codeine, thebaine, noscapine, oripavine, papaverine and narceine are alkaloids contained in opium or poppy straw. Morphine and codeine are under international control because of their abuse potential and thebaine is under such control because of its convertibility into opioids subject to abuse. Noscapine, oripavine, papaverine and narceine are not under international control. Morphine is the prototype of natural opiates and many opioids and, because of its strong analgesic potency, is used as a reference parameter for comparative purposes.

Morphine

49. In 2002, about 20 per cent of the morphine used worldwide was obtained from opium, while 80 per cent was extracted from poppy straw using concentrate of poppy straw as an intermediate or, to a much lesser extent, directly from poppy straw. Only about 10 per cent of the total amount of morphine is used for therapeutic purposes; most of it is converted either into other narcotic drugs, mainly codeine (more than 80 per cent), dihydromorphine, ethylmorphine and pholcodine, or into substances not covered by the 1961 Convention.

50. In recent years, morphine has been extracted from opium in opium-producing countries (China, the Democratic People's Republic of Korea and India) and in the countries importing opium from India (Japan, France, the United Kingdom and the United States). In addition, since 1989, the Islamic Republic of Iran has manufactured morphine from seized opium released for licit purposes (see para. 17 above). Morphine is obtained from concentrate of poppy straw (M) in the following countries: Australia, China, France, Hungary, Italy, Iran (Islamic Republic of), Japan, Netherlands, Norway, Slovakia, South Africa, Spain, the former Yugoslav Republic of Macedonia, Turkey, United Kingdom and United States. Morphine is extracted directly from poppy straw in Hungary and Slovakia.

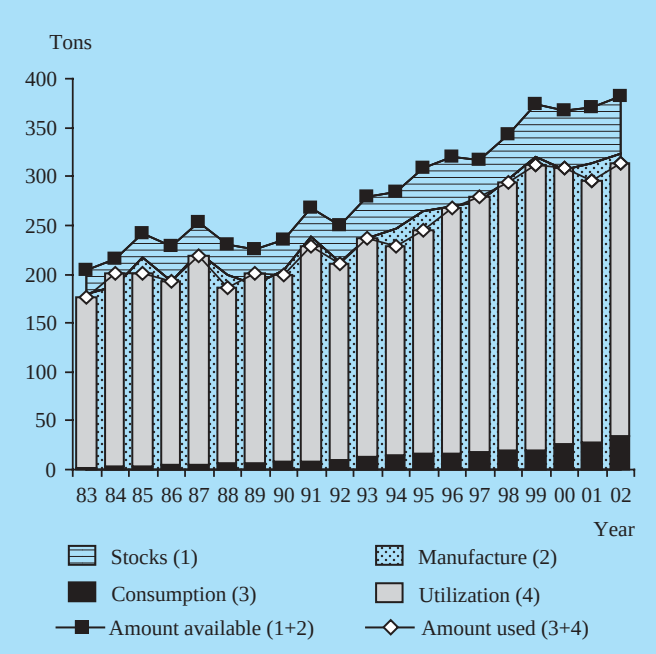
51. The highest manufacture of morphine has been reported by the United States, followed by France. In the United States, morphine manufacture increased rapidly, from less than 62 tons in 1996 to 90 tons in 1999, but it declined to the level of 77-79 tons in the following years (78.6 tons in 2002). Morphine manufacture in France also rose rapidly,

from 25.6 tons in 1990 to a peak of 49.6 tons in 2002. Other countries reporting in 2002 the manufacture of morphine in quantities of 1 ton or more were, in descending order, the United Kingdom (15.6 tons), Japan (13.5 tons), the Islamic Republic of Iran (11.1 tons), India (9.3 tons), South Africa (8.4 tons), Slovakia (7.3 tons), Hungary (5.3 tons), China (3.7 tons), Spain (1.7 tons), the former Yugoslav Republic of Macedonia (1.5 tons) and Italy and the Netherlands (both 1.4 tons). The manufacture of morphine in quantities of less than 1 ton was reported in 2002 by two other countries.

52. In Australia, China, Norway, Turkey and the United Kingdom, concentrate of poppy straw (M) is used in continuous industrial processes for the manufacture of other narcotic drugs or substances not covered by the 1961 Convention, without first separating morphine (see para. 59 below). In China, concentrate of poppy straw (M) is also used for the manufacture of morphine preparations included in Schedule III (see para. 58 below). For purposes of comparison, the theoretical quantity of morphine involved in such conversions or manufacture is calculated by INCB and included in the present publication in the statistics on global manufacture and utilization of morphine. An overview of the situation with respect to manufacture, stocks, consumption and utilization of morphine in the 20-year period 1983-2002 is presented in figure 15, which shows for each year the total amount of morphine available (initial stocks plus manufacture) and the total amount of morphine used (consumption plus utilization).

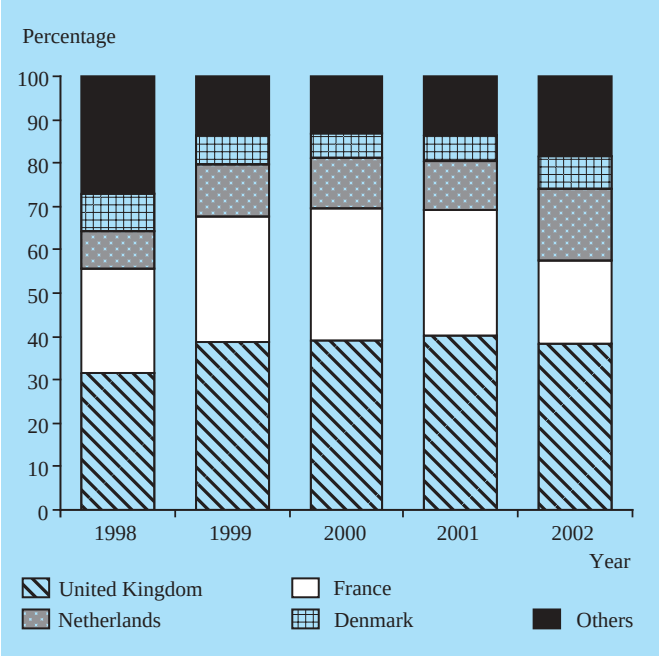
53. Global manufacture of morphine, including the calculated amounts referred to in paragraph 52 above, followed an increasing trend during the 20-year period 1983-2002. After having fluctuated around a level of about 210 tons per annum in the period 1985-1992, global manufacture of morphine started to grow steadily, attaining 320 tons in 1999. The manufacture declined slightly in 2000 but rose to a record level of 323 tons in 2002.

Figure 15. Morphine: global manufacture, stocks,[a] consumption and utilization, 1983-2002



[a]Stocks as at 1 January of a given year.

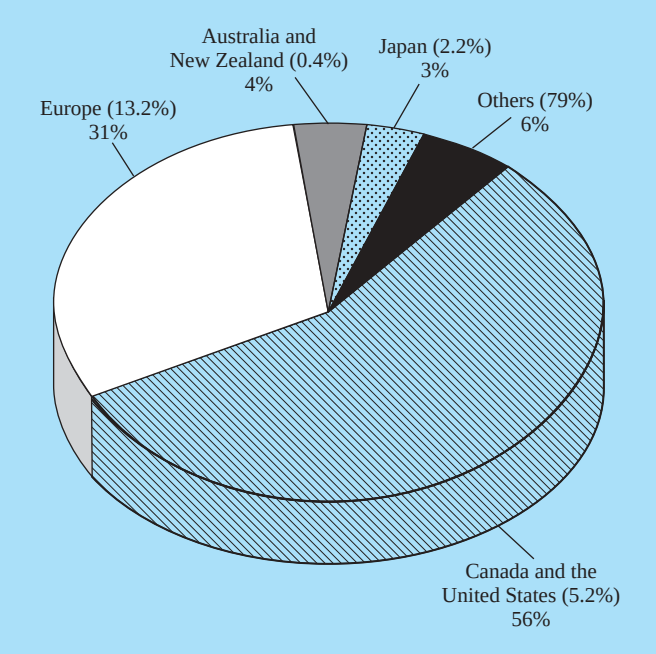
Figure 16. Morphine exports: shares of the main exporters, 1998-2002



54. The quantity of morphine exported is relatively low, if compared with the international trade in concentrate of poppy straw (M). This is due to the fact that most countries requiring morphine for conversion into other drugs prefer to import concentrate of poppy straw (M). Global exports of morphine were relatively stable and averaged 17 tons during the five-year period 1998-2002, amounting to 17.6 tons in 2002. Figure 16 shows the share of the main exporting countries in global exports of morphine in the period 1998-2002. In 2002, the United Kingdom was the leading exporter: it exported 6.8 tons, accounting for 39 per cent of global exports. It was followed by France (3.3 tons, accounting for 19 per cent of global exports), the Netherlands (2.9 tons, or 16 per cent of global exports) and Denmark (1.4 tons, or 8 per cent of global exports). Other countries exporting more than 100 kg of morphine in 2002 were, in descending order, Germany, Sweden, the United States, Austria, Australia, Switzerland, Italy, Portugal, Ireland and Belgium. The total number of countries reporting imports of morphine has increased as a result of its growing medical use. While 113 countries reported imports of morphine in 1990, that number increased to 158 in 2002. Eight countries imported more than 1 ton of morphine in 2002: Germany (2.2 tons), Belgium (2 tons), Brazil (1.9 tons), Denmark (1.9 tons), Canada (1.8 tons), United Kingdom (1.3 tons), Netherlands (1.1 tons) and Australia (1 ton). Twelve countries imported more than 100 kg of morphine in 2002.

55. Global consumption of morphine (excluding preparations in Schedule III; see para. 58 below) rose steadily during the 20-year period 1983-2002. Consumption increased almost fourfold, from 2.4 tons in 1983 to 10 tons in 1992, and then doubled, reaching 20.3 tons in 1999. It continued to grow very rapidly, amounting to 23.5 tons in 2001 and rising sharply to 27.2 tons in 2002, representing 272 millions of defined daily doses for statistical purposes (S-DDD). However, there continue to be very significant differences in consumption levels between countries. While 79 per cent of the world population lives in developing countries,

Figure 17. Morphine: distribution of consumption, 2002[a]



[a]Percentages in parentheses refer to shares of the world's population.

those countries' share of global consumption of morphine was only about 6 per cent in 2002 (see figure 17).

56. In 2002, the 10 countries with the largest consumption of morphine together accounted for almost 87 per cent of the world total. The United States was the main consumer (13 tons, accounting for 47.8 per cent of the world total); it was followed by France (2.5 tons, or 9.2 per cent of the world total), Canada (2.2 tons, or 8.2 per cent of the world total), Germany (1.5 tons, or 5.4 per cent of the world total), the United Kingdom (1.1 tons, or 4 per cent of the world total), Australia (1 ton, or 3.8 per cent of the world total), Japan (855 kg, or 3.1 per cent of the world total), Austria (576 kg, or 2.1 per cent of the world total), Brazil (441 kg, or 1.6 per cent of the world total) and Denmark (358 kg, or 1.3 per cent of the world total). Eleven other countries reported morphine consumption of more than 100 kg and another 26 countries reported more than 10 kg. The total number of countries reporting consumption of morphine in quantities of more than 1 kg increased from 54 in 1990 to 86 in 2002. Ranked according to S-DDD consumed in 2002 per million inhabitants per day, the five countries with the highest consumption were Canada (1,994 S-DDD), Austria (1,949 S-DDD), Denmark (1,841 S-DDD), Australia (1,498 S-DDD) and the United States (1,302 S-DDD).

57. In the United States, the country with the major share in the global consumption of morphine, consumption has been increasing continuously during the last 20 years, from 611 kg in 1983 to 8.4 tons in 1998. The consumption stagnated in the following two years, but resumed its rapid growth again in 2001 (10 tons) and in particular in 2002, when it grew by 30 per cent to almost 13 tons. In 2002, compared with the figures for the previous year, large increases in morphine consumption occurred also in Brazil (plus 30 per cent), Canada and Germany (plus 25 per cent in each country) and France (plus 15 per cent), while consumption stagnated or declined in the other main consumer countries.

58. In some countries, morphine is used for the manufacture of preparations included in Schedule III of the 1961 Convention. In 1998, China started to manufacture such preparations from concentrate of poppy straw in order to replace preparations in Schedule III of opium that had previously been manufactured in that country and used as cough suppressants (see also paras. 14 and 18 above). In China, concentrate of poppy straw containing about 7.1 tons of anhydrous morphine alkaloid was used for that purpose in 2002. Other countries reporting in 2002 the use of morphine for the manufacture of preparations in Schedule III in quantities of more than 10 kg were the United Kingdom (151 kg), Mexico (28 kg) and Australia (20 kg).

59. Apart from being used for medical treatment, morphine is predominantly converted into other opiates, mainly codeine. The amounts utilized for the manufacture of other drugs, having fluctuated at around 200 tons per annum until the beginning of the 1990s, began to rise in 1995, attaining a record level of 283 tons in 1999 but declining to 267 tons in 2002. The United Kingdom (72.6 tons),[13] the United States (54.3 tons), France (40.4 tons) and Australia (25 tons),[13] were the four main users in 2002, together accounting for 72 per cent of the world total. After a slight decline in 2001, the conversion of morphine increased in 2002 by 20 per cent in the United Kingdom, to the highest level ever achieved in that country. In the United States, the conversion of morphine also increased in 2002, but was still lower by more than 25 per cent than in 1999. Other countries reporting the conversion of morphine in quantities of more than 1 ton in 2002 were Japan (12.8 tons), the Islamic Republic of Iran (11.1 tons, a decline of 45 per cent against 2001), India (9.2 tons), Norway (8.5 tons),[13] South Africa (8.2 tons), Slovakia (6.3 tons), Hungary (4.4 tons), Spain (3.8 tons), China (3.4 tons),[13] Belgium (2 tons), Italy and the former Yugoslav Republic of Macedonia (1.4 tons each) and Brazil (1 ton). Four other countries reported the conversion of morphine in quantities of less than 1 ton.

60. Morphine is also used for the manufacture of substances not controlled under the 1961 Convention, such as noroxymorphone, nalorphine and naloxone. The quantities utilized for that purpose increased sharply from a level of about 4 tons per annum in the period 1990-1995 to 10.1 tons in 1996 and remained at a level of about 9 tons per annum till 2001. In 2002, 13.4 tons were used for that purpose. The United States, with almost 13 tons, accounted for 97 per cent of the total, using morphine mainly for the manufacture of noroxymorphone. The remainder was accounted for by China, the Netherlands and the United Kingdom.

61. Stocks of morphine increased from less than 38 tons in 1993 to about 62 tons in 1999 and then declined slightly in 2002 to 55.3 tons. The United States held morphine stocks of 23.8 tons in 2002 (accounting for 43 per cent of global stocks), reducing them by more than 6 tons against the previous year; it was followed by the United Kingdom (6.8 tons, accounting for 12 per cent of global stocks) and France (6.3 tons, or 11 per cent of global stocks). Six other countries reported stocks of more than 1 ton of morphine, while another 17 countries reported stocks of more than 100 kg of morphine.

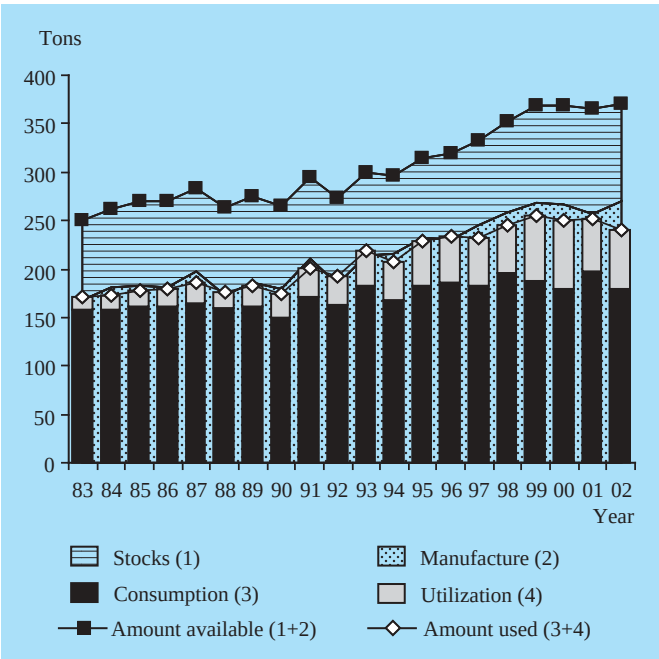
[13]This country reported utilization of large quantities of concentrate of poppy straw (M) for the manufacture of other alkaloids in continuous manufacturing processes. The published figure includes the theoretical quantity of morphine involved in such conversions as calculated by INCB.

Codeine

62. Although codeine is a natural alkaloid of the opium poppy, most (85-90 per cent) of the codeine currently manufactured is obtained from morphine through a semi-synthetic process. Codeine is used mainly for the manufacture of preparations in Schedule III (over 95 per cent of codeine used for medical purposes in 2002), including combination products, while a smaller quantity is used for the manufacture of other narcotic drugs (dihydrocodeine and hydrocodone). A comparison between the availability of codeine (manufacture and stocks) and its use (consumption and utilization) during the 20-year period 1983-2002 is shown in figure 18.

63. After following a generally upward trend in the 1990s, codeine manufacture has remained relatively stable since 1999, amounting to 269.0 tons in 2002 (see figure 19). The main manufacturer of codeine in 2002 was the United Kingdom, with an output of 69.2 tons (or 25.7 per cent of the world total), which is that country's highest level of manufacture. The other major manufacturers were (see figure 20): the United States (60.6 tons, or 22.5 per cent of the world total), France (34.1 tons, or 12.7 per cent of the world total), Australia (29.2 tons, or 10.9 per cent of the world total) and Japan (15.3 tons, or 5.7 per cent of the world total). Other countries reporting manufacture of codeine in 2002 in quantities of between 1 and 10 tons were India (9.3 tons), the Islamic Republic of Iran (9.1 tons), Spain (8.1 tons), Norway (8.0 tons), South Africa (7.5 tons), Slovakia (5.0 tons), Hungary (4.9 tons), China (3.3 tons), Italy (1.4 tons), the former Yugoslav Republic of Macedonia (1.3 tons) and Brazil (1.1 tons). Those 11 countries together accounted for 21.9 per cent of global manufacture. Decreases in the output of the Islamic Republic of Iran, Slovakia, Spain and Turkey were compensated by increases in Hungary, India, Norway, the United Kingdom and the United States.

Figure 18. Codeine: global manufacture, stocks,[a] consumption and utilization, 1983-2002



[a]Stocks as at 1 January of a given year.

Figure 19. Codeine manufacture: world total, Australia, France, Japan, the United Kingdom and the United States, 1983-2002

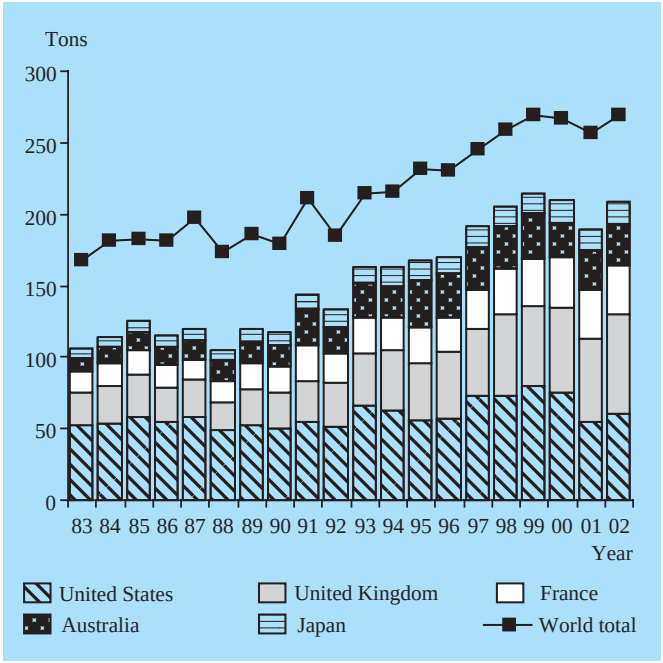
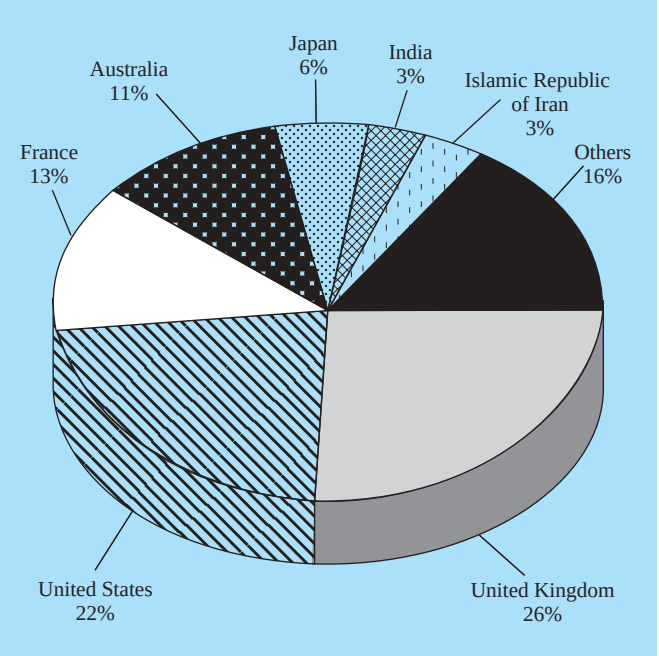
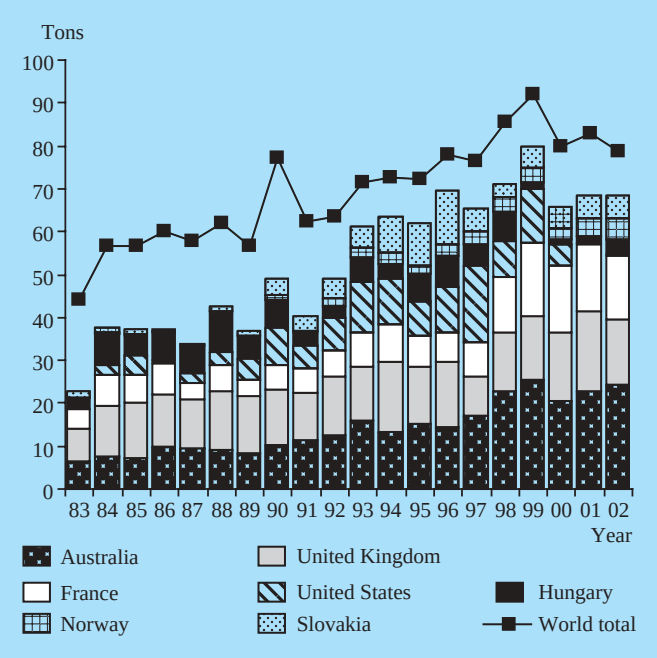


Figure 20. Codeine manufacture: shares of the main manufacturers, 2002



64. As in the case of manufacture, exports of codeine increased continuously until 1999 (92.2 tons). The level of exports then descended in 2000 owing to a decrease in exports from the United States and has remained relatively stable since then (see figure 21). Exports for 2002 totalled 79.5 tons, of which the largest exporter remained Australia (24.2 tons), accounting for over 30 per cent of total exports. The other large exporters were the United Kingdom (15.4 tons) and France (14.7 tons). Seven other countries reported exports of between 1 and 6 tons, together accounting

Figure 21. Codeine exports: world total, Australia, France, Hungary, Norway, Slovakia, the United Kingdom and the United States, 1983-2002



for almost a third of total exports: Slovakia (5.3 tons), Norway (5.0 tons), Hungary (3.4 tons), Germany (3.3 tons), Switzerland (2.8 tons), Spain (2.3 tons) and Turkey (1.2 tons). Each of the other countries that reported exports of codeine in 2002 accounted for less than 1 per cent of the total. As in previous years, the main importers of codeine in 2002 were Canada (14.7 tons), Germany (11.3 tons), Switzerland (6.6 tons) and India (5.2 tons). Fourteen other countries reported imports of between 1 ton and 4 tons, while more than 100 countries reported imports of under 1 ton.

65. Codeine is the narcotic drug the most widely used in medical practice around the world, mainly in the form of preparations in Schedule III. However, it should be noted that countries that report the utilization of codeine for the manufacture of preparations in Schedule III do not necessarily consume those preparations, but may export them to other countries.[14]

66. The consumption of codeine has fluctuated between 150 and 190 tons during the past 20 years (see figure 18). Although available statistical data indicate a significant decrease from 2001 to 171.9 tons in 2002, that total does not include data on India.[15] The average annual consumption of codeine in India in the 10-year period (1992-2001) was 14.1 tons; if that quantity is added to the reported total for 2002, then total consumption of codeine would be 186 tons (corresponding to approximately 1.8 billion S-DDD), for a reduction of less than 6 per cent from 2001. According to available statistical data for 2002, the main countries that reported the use of codeine for medical purposes in 2002, mostly for the manufacture of preparations in Schedule III, were the United Kingdom (32.9 tons), the United States (29.8 tons), France (19.3 tons), Canada (14.8 tons), the Islamic Republic of Iran (9.1 tons), South Africa (7.6 tons) and Spain (5.3 tons). Those seven countries together accounted for 69.0 per cent of global use. It should be noted that, for the first time, the United Kingdom surpassed the United States in the use of codeine, owing mainly to an increase in the quantity of codeine used for the manufacture of preparations in Schedule III.

67. The utilization of codeine for the manufacture of other narcotic drugs, namely dihydrocodeine and hydrocodone, increased from 13.3 tons in 1983 to a peak of 70.9 tons in 2000, but then decreased to 61.6 tons in 2002 (about 26.4 per cent of all codeine used that year). Of that quantity, 30.9 tons were used in the United States for the manufacture of hydrocodone, while the remainder was used for the manufacture of dihydrocodeine in Belgium, Germany, Italy, Japan, the United Kingdom and the United States.

68. Despite a dip in 2001, global stocks of codeine rose to 114.9 tons in 2002, which represents the peak of a generally upward trend since 1983. The United States remained the principal holder of stocks (20.0 tons), followed by the United Kingdom (16.9 tons), and France (10.1 tons). Four countries held stocks of between 5 and 10 tons: Australia (9.6 tons), Spain (8.3 tons), Canada (7.2 tons) and India (5.4 tons). Twelve countries held stocks of codeine in quantities of between 1 and 5 tons, while another 22 countries held stocks in quantities between 100 kg and 1 ton.

Thebaine

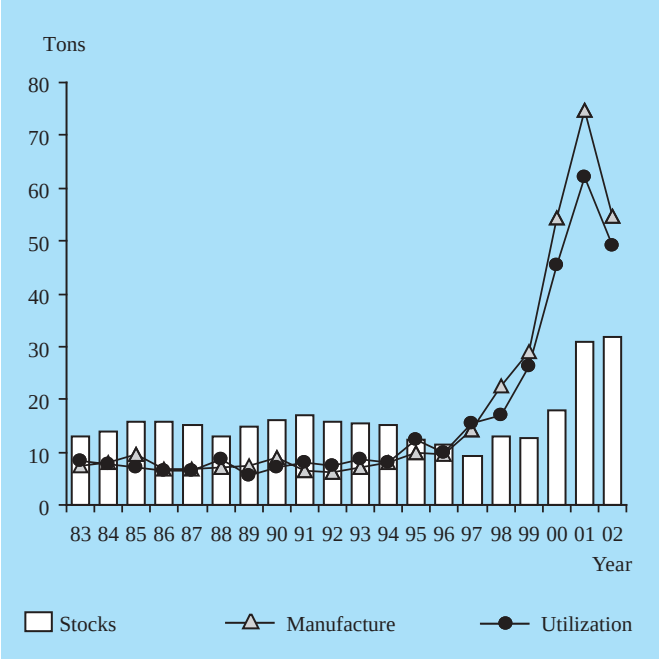
69. Until recently, thebaine was obtained mainly from opium. Since 1999, poppy straw with a high thebaine content produced in Australia and France has become the main source for its extraction. In addition, thebaine is obtained through conversion of semi-synthetic alkaloids such as hydrocodone. Thebaine is not itself used in therapy, but it is an important starting material for the manufacture of a number of opioids, mainly codeine, dihydrocodeine, etorphine, hydrocodone, oxycodone, oxymorphone and buprenorphine, the latter substance being under the control of the 1971 Convention. Thebaine is also the starting material for the manufacture of substances not under international control, such as the derivatives naloxone, naltrexone, nalorphine and nalbuphine, some of which are used in the treatment of opiate poisoning and opiate addiction.

70. Following a period of fluctuation between 6 and 10 tons until 1996, global manufacture of thebaine increased very sharply, reaching 74.6 tons in 2001. In 2002 it dropped to 54.6 tons (see figure 22). For two decades the United States has been the main manufacturer of thebaine, having increased its manufacture from 4.6 tons in 1996 to 58.2 tons in 2001. In 2002 output in that country was only 31.9 tons (a decline of 82 per cent). In contrast, manufacture of thebaine in Australia, the second largest manufacturer, almost doubled in 2002, reaching 12.6 tons; other countries reporting manufacture of thebaine in 2002 were Spain (5.6 tons), France (1.9 tons), Japan (882 kg), India (804 kg) and Hungary (770 kg). Those seven countries together

[14]For information on frequent problems in reporting estimates and statistics of narcotic drugs used in the manufacture of preparations in Schedule III, see paragraphs 89 and 90 of the report of INCB for 2002 (United Nations publication, Sales No. E.03.XI.1).

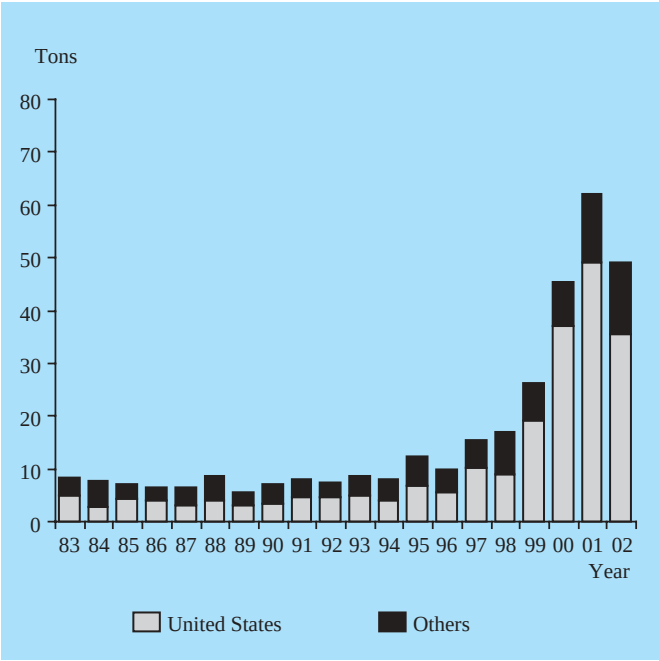
[15]No annual statistical data on the consumption of codeine in 2002 had been received from India at the time of publication. However, in 2001, India reported consumption of 15.3 tons of codeine, ranking sixth among all consumer countries.

Figure 22. Thebaine: global manufacture, utilization and stocks,[a] 1983-2002



[a]Stocks as at 1 January of a given year.

Figure 23. Thebaine: utilization for the manufacture of opioids, the United States and other countries, 1983-2002



accounted for over 99 per cent of global manufacture of thebaine in 2002. Manufacture of thebaine in 2002 was also reported by Slovakia (79 kg), China (66 kg) and Argentina (10 kg). Global exports of thebaine continued to follow an upward trend, reaching 17.8 tons in 2002. Australia remained the main exporter of thebaine in 2002 (10.6 tons); it was followed by Spain (5.5 tons), Hungary (780 kg) and the United Kingdom (542 kg). The United Kingdom continued to be the main importer of thebaine in 2002, with 11 tons; it was followed by Germany (2.9 tons), France (2.7 tons) and Australia (536 kg). Italy, Switzerland, Belgium and the Czech Republic, in descending order, reported having imported thebaine in quantities of between 100 and 250 kg in 2002.

71. The developments in the manufacture of thebaine are a reflection of the change in its utilization in the manufacture of other narcotic drugs. The total quantity used for such manufacture fluctuated until the mid-1990s, before which thebaine had been used predominantly for the manufacture of codeine, dihydrocodeine and hydrocodone. In 1994 utilization of thebaine in the manufacture of oxycodone became the main use of thebaine and grew rapidly as a direct consequence of increasing manufacture of oxycodone since the mid-1990s (see paras. 86 and 87 below), resulting in an increase in its total utilization to 59.7 tons in 2001 (see figure 23). Also in 2002 oxycodone was the main drug obtained from thebaine, but total utilization had dropped to 48.2 tons. As in previous years, the change in the utilization of thebaine in the United States is mainly responsible for the global development: in that country, 35.6 tons of thebaine were used in 2002 compared with 49.1 tons in 2001, owing to the large stocks of oxycodone held. France also reported decreased use of thebaine in 2002 (4.3 tons as opposed to 5.1 tons in 2001), whereas the United Kingdom reported a continued increase in such use also for 2002, attaining 7.3 tons. In Japan, 761 kg of thebaine were utilized during 2002 for the manufacture of dihydrocodeine. Italy, which had reported use of 424 kg of thebaine in 2001 for the manufacture of other drugs, did not report such use for 2002. Three other countries, Argentina, Belgium and Germany, reported the utilization of thebaine in quantities of between 15 and 135 kg.

72. The quantity of thebaine reported as used for the manufacture of substances not covered under the 1961 Convention, which has increased despite fluctuation in the last two decades to reach 2.5 tons in 2001, mainly as a result of its increased use for conversion into buprenorphine, dropped in 2002 to 1.8 tons. That decline was due to a decrease in such use of thebaine reported by Germany for 2002 (875 kg) and by the United Kingdom (861 kg). The Czech Republic (61 kg), China (33 kg) and Denmark (2 kg) reported its utilization also for the manufacture of substances not covered under the 1961 Convention.

73. Global stocks of thebaine were stable at a level of about 15 tons until 1994, when they gradually started to decline to 9.3 tons in 1997. Stocks grew rapidly again after 1998 to 31.8 tons in 2002, despite the depletion of stocks of thebaine in the United States from 15 to 10.7 tons at the end of 2002. The other countries reporting stocks of thebaine for 2002 were the United Kingdom (7.3 tons), Japan (4.0 tons), Australia and Germany (2.9 tons each), France (1.7 tons), Spain (1.4 tons), Italy (436 kg), the Netherlands (165 kg) and the Czech Republic (140 kg).

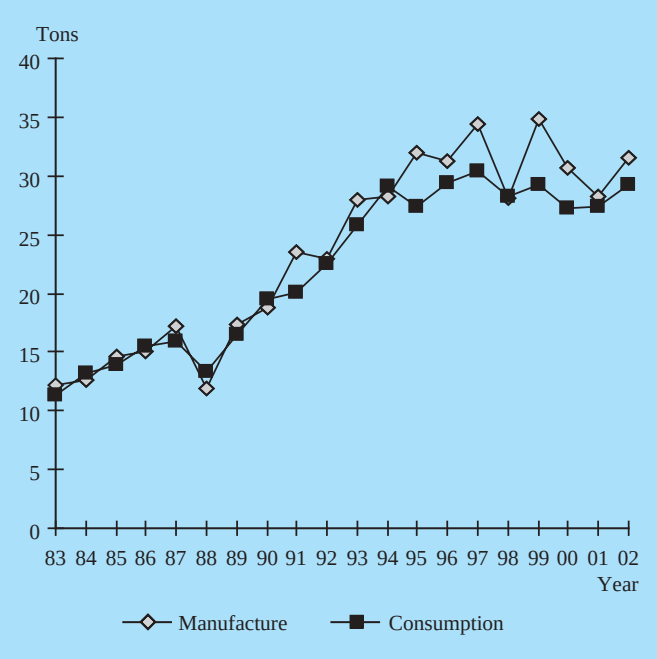
Semi-synthetic alkaloids

74. Semi-synthetic alkaloids are made by relatively simple chemical modifications of natural opiates such as morphine, codeine and thebaine. Some examples of those simple derivatives are dihydrocodeine, ethylmorphine, heroin, oxycodone and pholcodine. The information on semi-synthetic alkaloids is presented in English alphabetical order.

Dihydrocodeine

75. Global manufacture of dihydrocodeine rose for two decades until 1999, when it reached 34.8 tons (see figure 24). After that, however, it fell to an average of 30 tons, owing to a decrease in most manufacturing countries, in particular, the United Kingdom. In 2002 global manufacture stood at 31.5 tons. The United Kingdom and Japan, as the main manufacturing countries, accounted for 13.8 and 12.3 tons, respectively. Slovakia increased its manufacture from 191 kg in 2001 to 1.1 tons in 2002. Other countries, all manufacturing dihydrocodeine in 2002 at levels comparable with recent years, were Italy (2.9 tons), the United States (646 kg), Germany (477 kg) and Belgium (208 kg). Total exports of dihydrocodeine fell between 1995 and 1997; since then they have recovered and in 2002 they amounted to 11.2 tons. In 2002, the United Kingdom remained the leading exporter (6.8 tons); it was followed by Italy (2.6 tons), Slovakia (898 kg), Hungary (302 kg) and Belgium (201 kg). The leading importer was Ireland (4.2 tons), followed by the United Kingdom (2.3 tons), the Republic of Korea (1.9 tons), the Netherlands (871 kg), Hungary (663 kg), Malaysia (309 kg), Germany (301 kg) and Colombia (134 kg).

Figure 24. Dihydrocodeine: global manufacture and consumption, 1983-2002



76. Dihydrocodeine is consumed mainly in the form of preparations in Schedule III; in 2002, as in previous years, the share of total consumption accounted for by such preparations was over 98 per cent. Following an increase during the period 1980-1994, dihydrocodeine use remained steady, at an average of 29 tons, until 1999 (see figure 24). Use dropped by 2 tons in 2000 and stayed at that level (27.3 tons) in 2001, owing to its decreasing consumption and utilization for the manufacture of preparations in Schedule III in the United States and in European countries. In 2002, total consumption rose again to 29.2 tons (or 290 million DDDs). Major users of dihydrocodeine were Japan (11.6 tons), the United Kingdom (9.3 tons), Ireland (4.3 tons), the Republic of Korea (1.3 tons) and Germany (762 kg). Consumption and utilization of dihydrocodeine in quantities of 100-500 kg were reported for 2002 by, in descending order, Hungary, the United States, Italy, Malaysia, Colombia and Romania.

77. Global stocks of dihydrocodeine, which averaged 7.3 tons yearly between 1982 and 1990, have followed an upward trend in the last decade, amounting to 16.9 tons at the end of 2002. Stocks of dihydrocodeine held by Japan amounted to 9 tons in 2002, accounting for 53 per cent of global stocks. Significant stocks were held by the United Kingdom (3.7 tons), Italy (914 kg), Germany (661 kg), the Republic of Korea (550 kg), the Netherlands (469 kg), Ireland (333 kg), the United States (306 kg), Slovakia (236 kg) and Hungary (221 kg).

Dihydromorphine

78. In the 1990s, manufacture of dihydromorphine grew steadily, reaching 1,679 kg in 2000. In 2002, manufacture amounted to 962 kg, which is slightly higher than the quantity reached in 2001 (901 kg). The United Kingdom, the only manufacturer of dihydromorphine until 1998, reported having manufactured 806 kg of the drug in 2002. In the United States manufacture of dihydromorphine started in 1999 and grew rapidly to reach 571 kg in 2001; for 2002 the United States reported output of 156 kg. Dihydromorphine is manufactured exclusively for use in the manufacture of hydromorphone (see para. 85 below). In 2002, such use amounted to 1,158 kg, with 720 kg reported by the United Kingdom and 438 kg by the United States. Global stocks of dihydromorphine, which in previous years had risen and reached 411 kg in 2001, dropped sharply in 2002 to 32 kg, held almost exclusively in the United Kingdom.

Ethylmorphine

79. The downward trend in global manufacture of ethylmorphine in the last two decades, starting from a level of nearly 7 tons in the early 1980s and declining to less than 2 tons in 2000, continued in 2002, when such manufacture amounted to 1.7 tons, reflecting mainly developments in France. That country was the main manufacturer in 2002, accounting for an output of 1,202 kg, or 70 per cent of the world total. Manufacture of ethylmorphine in quantities of between 80 and 200 kg were reported for 2002 by, in descending order, India, Belgium, Slovakia and Hungary. Global exports of ethylmorphine have fluctuated in recent years; after rising to 1,003 kg in 2001 they dropped to 727 kg in 2002. France, which exported 621 kg of ethylmorphine, remained the largest exporter, accounting for 85 per cent of the world total. In 2002 Sweden continued to be the only country that imported ethylmorphine in quantities exceeding 100 kg and reported imports of 453 kg of the drug; other countries importing more than 30 kg were Tunisia (54 kg), Finland (50 kg) and Norway (32 kg).

80. Global consumption of ethylmorphine has declined continuously, reaching 1.3 tons in 2002 (25.1 million S-DDD). In the past two decades the decline was a result of the decreased use of the drug for the manufacture of preparations in Schedule III in France. The four largest users of ethylmorphine in 2002 were Sweden (425 kg), France (207 kg), Hungary (194 kg) and Belgium (110 kg). India, which for 2000 has reported use of ethylmorphine of 380 kg, has not furnished data on its use since. Global stocks fell

until 1996, when they began to recover; at the end of 2002 they amounted to 2.1 tons. France (903 kg), India (515 kg), Turkey (157 kg) and Sweden (102 kg) held the largest stocks of the drug, together accounting for close to 80 per cent of the world total.

Heroin

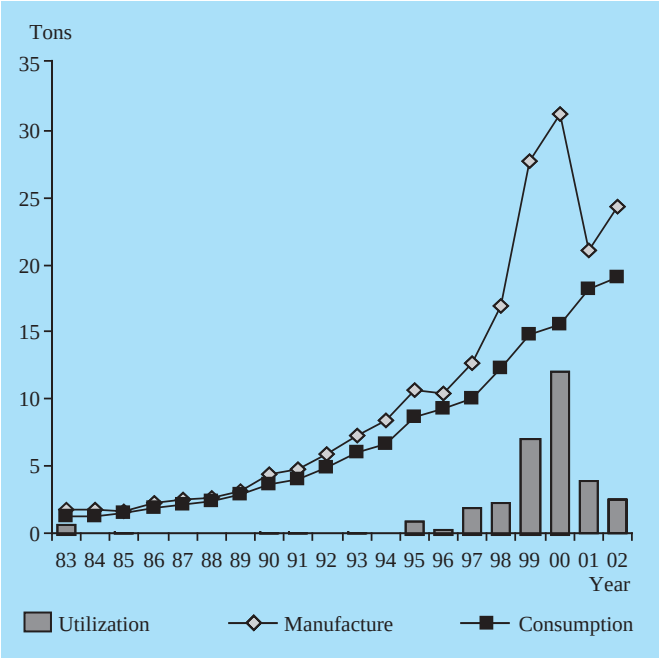
81. Global manufacture of heroin increased from over 100 kg at the beginning of the 1980s to 507 kg in 1999; it has stabilized since then, amounting to 477 kg in 2002. The United Kingdom has been the main manufacturer, accounting for over 90 per cent of the total throughout those years, with the exception of 1998, when its manufacture of heroin dropped to 57 kg. In 2002, the United Kingdom was the only manufacturer. The Netherlands, which between 1998 and 2001 manufactured around 40 kg, and Belgium, which had manufactured heroin at irregular intervals in quantities ranging from 1 kg to 91 kg (1998), reported no manufacture of heroin for 2002. The United Kingdom also continued to be the main exporter of heroin, accounting with 307 kg for 94 per cent of global exports in 2002, with the bulk of the remaining exports effected by Switzerland. Between 1993 and 2000, Switzerland accounted for over 95 per cent of global imports of heroin; the heroin that it imported was for distribution to addicts in connection with a government-approved heroin distribution programme; since 2001, Switzerland's share in global imports has been slightly above 70 per cent. As in 2001, Germany and the Netherlands were the other two importers in 2002, both importing heroin for use in research on the effectiveness of prescribing heroin for drug addicts.

82. The United Kingdom was the principal consumer of heroin until 1995, accounting for more than 98 per cent of the world total during the years prior to 1992, but after the mid-1990s consumption of heroin in the United Kingdom declined to 33 kg in 2001. In 2002, heroin consumption in that country increased to 95 kg, or 27 per cent of the world total, which was 348 kg. In the United Kingdom, heroin is used mainly for the alleviation of acute pain in terminally ill cancer patients and for administration to a limited number of drug addicts. Since 1993, heroin has been administered to drug addicts in Switzerland in quantities ranging from 13 kg to 203 kg; in 2002, 197 kg of heroin were reported to have been used for that purpose. In Germany and the Netherlands, consumption of heroin in scientific research on the medical effectiveness of medically prescribed heroin for heroin addicts amounted to 19 kg and 35 kg, respectively, in 2002. The only other country reporting consumption of heroin for medical purposes in quantities of more than 1 kg in 2002 was Belgium (2.9 kg). Global stocks of heroin fluctuated in recent years around 550 kg and stood at 606 kg at the end of 2002. In that year, Switzerland held the largest stocks of heroin (220 kg); it was followed by the United Kingdom (202 kg), Belgium (56 kg), Germany (54 kg) and the Netherlands (52 kg).

Hydrocodone

83. While global manufacture of hydrocodone grew steadily in the late 1990s to reach 31.3 tons in 2000, reflecting an increase in its consumption and utilization in the United States, it has dropped since then and stood at 24.3 tons in 2002 (see figure 25). Throughout the last decade the United States has accounted for more than 98 per cent of global

Figure 25. Hydrocodone: global manufacture, consumption and utilization, 1983-2002



manufacture of hydrocodone. The United States reported losses during manufacture of 1.7 tons of hydrocodone for 2002.[16] Total exports have fluctuated over the years and reached an all-time high in 1998 (234 kg); in 2002 they amounted to 167 kg. Belgium, which at irregular intervals has manufactured hydrocodone almost exclusively for export, was the main exporter in 2002. Canada was the main importer of hydrocodone until 2001; in 2002, Germany, with 74 kg, reported the largest quantity of imports, followed by Ireland, the United States and Canada, all reporting imports of hydrocodone in quantities of 20-23 kg.

84. Consumption of hydrocodone in the United States continued to increase, reaching 19 tons in 2002. As in previous years, the United States accounted for more than 99 per cent of global consumption, which stood at close to 1.3 billion S-DDD. In addition, hydrocodone is used in the United States for the manufacture of thebaine: in 2000 such use totalled 12.2 tons, while in 2002 it amounted to only 2.5 tons, as raw materials for the extraction of thebaine were available in sufficient quantities. In addition to the United States, the countries reporting highest consumption of hydrocodone were Canada (52 kg), Belgium (11 kg), Germany (6 kg), Argentina (4 kg) and Switzerland (3 kg). Ranked according to S-DDD of hydrocodone consumed per million inhabitants per day, countries with the highest consumption in 2002 were the United States (12,274 S-DDD), Canada (311 S-DDD), Belgium (198 S-DDD), Switzerland (87 S-DDD), Argentina (18 S-DDD) and Germany (13 S-DDD). Global stocks also increased significantly until 2000, when they reached 16.3 tons; they stood at 14.9 tons at the end of 2002. In the United States, stocks of hydrocodone held in 2002 accounted for 98 per cent of the world total.

[16] Manufacturing "losses" are those having occurred: *(a)* during the process of refining a drug; *(b)* during the process of transformation of a drug into its salts, isomers, esters and ethers, as applicable according to the Schedules; and *(c)* during the manufacture of preparations other than those included in Schedule III. They may be due to chemical decomposition of a drug, leakage or evaporation, quality requirements or accidents.

Hydromorphone

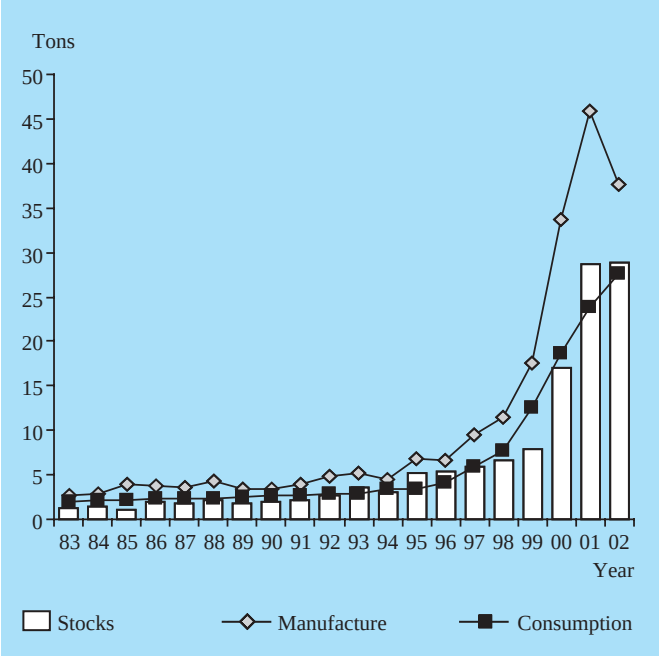
85. Global manufacture of hydromorphone followed an upward trend in the last two decades and reached 1,208 kg in 2002. During the same period, the United States, followed by the United Kingdom, were the main manufacturers of the substance; for 2002 they reported manufacture of 860 kg and 333 kg, respectively. Total exports of hydromorphone also followed an upward trend; in 2002, they reached an all-time high of 726 kg. Until 1999, the United States was the main exporter of hydromorphone; since 2000, it has been the United Kingdom. In 2002, the exports of the United Kingdom and the United States totalled 491 kg and 124 kg, respectively. Canada remained the main importer of hydromorphone, followed by Germany, Denmark, Austria and France. Global consumption of hydromorphone has followed an upward trend, attaining 1,035 kg in 2002, or almost 52 million S-DDD. The United States remained the main consumer in absolute terms; however, although it consumed 525 kg in 2002, its share of the world total decreased from 80 per cent in 1991 to 51 per cent in 2002, as the use of the drug increased in other developed countries. In 2002, the other main consumer countries of hydromorphone were Canada (379 kg), Germany (59 kg), Austria (20 kg) and France (19 kg). Ranked according to S-DDD of hydromorphone consumed per million inhabitants per day, the countries with the highest consumption in 2002 were Canada (1,703 S-DDD), Austria (339 S-DDD), the United States (263 S-DDD), Ireland (146 S-DDD), Germany (98 S-DDD) and Sweden (93 S-DDD). Global stocks of hydromorphone in 2002 stood at 1,290 kg, of which the United States held 964 kg and the United Kingdom 122 kg.

Oxycodone

86. Global manufacture of oxycodone rose gradually from an average of 2.1 tons per annum at the beginning of the 1980s to 11.5 tons in 1998. Between 1999 and 2001, it grew faster, reflecting an ongoing increase in the consumption of that substance; by contrast, in 2002 global manufacture fell from a record high of 45.9 tons in 2001 to 37.6 tons. The decrease is due to a drop in output in the United States from 39.7 tons in 2001 to 29.5 tons in 2002, probably as a reaction to the large stocks of the substance held at the end of 2001 (see figure 26). The United States continues to be the leading manufacturer of oxycodone, although its share fell below 80 per cent for the first time in 2002. The United States reported losses during manufacture of 5.4 tons of oxycodone in 2002. In the United Kingdom, oxycodone manufacture continued to increase, reaching 4.2 tons in 2002. In France and Italy, oxycodone is manufactured almost entirely for use in the manufacture of substances not covered under the 1961 Convention. Manufacture and utilization have increased steadily in France since 1990; in 2002 manufacture of oxycodone in that country reached 3.9 tons and its utilization reached 3.6 tons. In Italy, the manufacture and utilization of oxycodone have fluctuated; in 2002 no manufacture was reported and its utilization amounted to 326 kg. As was the case for 2001, the Netherlands also reported for 2002 utilization of 201 kg of oxycodone for the manufacture of substances not controlled under the 1961 Convention.

87. Total exports of oxycodone continued to follow an upward trend, rising to 4.1 tons in 2002. The United Kingdom remained the main exporter in 2002 (3,312 kg); it was followed by Denmark (530 kg). France, Germany, Spain and Ireland, in descending order, exported between 20 kg and 80 kg. Canada remained the leading importer of oxycodone in 2002 (1,471 kg); it was followed by Denmark (619 kg), Germany (498 kg), Australia (455 kg), the Netherlands (224 kg) and France (188 kg). Global consumption has risen steadily, reflecting increased use of controlled-release preparations containing oxycodone for the treatment of moderate to severe pain; in 2002 it reached 27.6 tons, or 368 million S-DDD. Consumption of oxycodone also grew in the United States, which continued to be the largest consumer of oxycodone (24.4 tons). Until 2001, the United States' share of global consumption had always been above 90 per cent, but in 2002 it fell for the first time to 88 per cent. Other main consumer countries in 2002 were Canada (1,678 kg), Germany (498 kg), Australia (374 kg) and the United Kingdom (143 kg). Ranked according to S-DDD consumed per million inhabitants per day, the five countries with the highest consumption in 2002 were the United States (3,264 S-DDD), Canada (2,011 S-DDD), Australia (721 S-DDD), Denmark (684 S-DDD) and Finland (478 S-DDD). An increase in oxycodone consumption could also be observed in other developed countries. In the United States, oxycodone is also utilized for the manufacture of oxymorphone; in 2002 such use amounted to 477 kg. Global stocks of oxycodone, having increased slowly until 1999 and rapidly from 2000 to 2001, levelled off and stood at 28.9 tons at the end of 2002. The United States held 25.1 tons, accounting for 87 per cent of the world total.

Figure 26. Oxycodone: global manufacture, consumption and stocks, 1983-2002



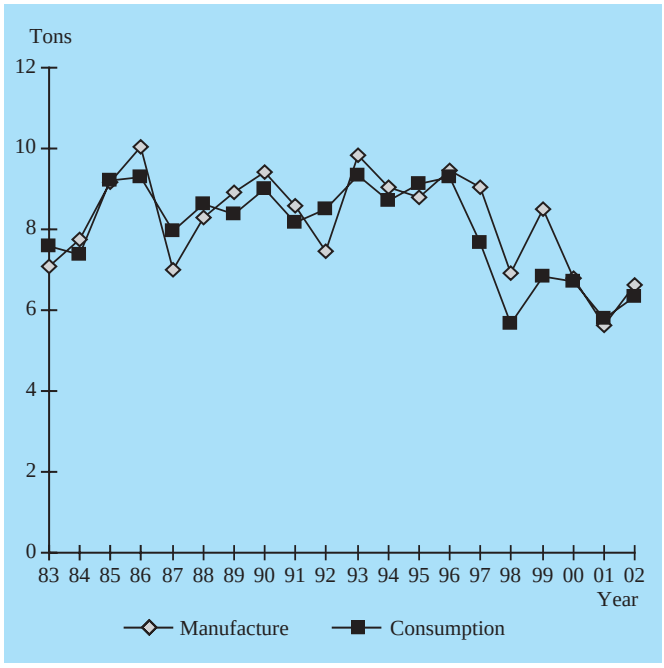
Pholcodine

88. During the 20-year period 1983-2002, global manufacture of pholcodine fluctuated between 6 tons and 10 tons per year (see figure 27). In 2002, it stood at 6.6 tons. France, with 3.7 tons, or 56 per cent, continued as the main manufacturer, followed by the United Kingdom (1.7 tons) and Belgium (851 kg). Norway, South Africa and the former Yugoslav Republic of Macedonia manufactured 192 kg,

84 kg and 79 kg, respectively. Exports of pholcodine have remained at an annual average of 3.3 tons since 1996, following a gradual increase until 1995. In 2002 they rose to 4.2 tons. France (1,478 kg), the United Kingdom (1,469 kg) and Belgium (965 kg) were the main exporters of pholcodine in 2002, together accounting for 94 per cent of the world total. Australia was the main importer of the substance in 2002 (681 kg); it was followed by Algeria (612 kg), the United Kingdom (602 kg), Ireland (178 kg), Switzerland (166 kg) and Hong Kong Special Administrative Region of China (150 kg). Imports of pholcodine in quantities of 50-100 kg were reported for 2002 by, in descending order, Morocco, New Zealand and Egypt. Data on imports of pholcodine since 2001 are missing from Pakistan, which in 2000 imported 875 kg.

89. Most pholcodine is consumed in the form of preparations in Schedule III; as in previous years, in 2002 such preparations accounted for more than 80 per cent of total consumption. The downward trend observed since the mid-1980s in the use of pholcodine for the manufacture of preparations in Schedule III in France, the principal user of the drug, caused the world total to drop as well (see figure 27). Since 1998, global annual consumption has averaged around 6.2 tons; in 2002 it amounted to 6.3 tons (or 127 million S-DDD). France continued to be the main user in 2002, using 2.2 tons of pholcodine, or 35 per cent of the world total; it was followed by the United Kingdom (1.4 tons), Algeria (0.7 ton), Australia (0.5 ton) and Pakistan (340 kg). Since 1984, global stocks of pholcodine have remained steady at between 3 tons and 4.5 tons. At the end of 2002, they amounted to 3.4 tons, of which 1.2 tons were held by France and 496 kg by the United Kingdom. The remainder was accounted for mainly by Belgium (348 kg), Australia (278 kg), Norway (171 kg), Morocco (156 kg) and Ireland (113 kg).

Figure 27. Pholcodine: global manufacture and consumption, 1983-2002



Synthetic opioids

90. Synthetic opioids[17] are used in the treatment of chronic, moderate or severe pain and as analgesics for patients with special requirements. They are also used for the induction of general anaesthesia and in the treatment of specific conditions such as gastrointestinal disorders. Methadone is also used in detoxification and maintenance treatment related to heroin dependency, given its moderating action on withdrawal symptoms. The synthetic substances in this section are listed in English alphabetical order.[18]

Dextropropoxyphene

91. Manufacture of dextropropoxyphene has followed a generally upward trend since 1980, reaching its highest level yet in 2002 with 348.8 tons (see figure 28) as a result of the increased output of Italy and the United States. The United States remained the largest manufacturer (157.8 tons or 45.2 per cent of total manufacture). In that connection, the United States also reported 26.2 tons of destruction and/or losses of dextropropoxyphene in 2002, or 16.6 per cent of its total manufacture. The second most important manufacturer in 2002 was India (97.8 tons, 28.0 per cent of the world total); it was followed by Italy (69.6 tons, or 19.9 per cent of the world total), and France (22.7 tons, or 6.5 per cent of the world total). Switzerland, which had been an important manufacturer in the past (in 1999, when it reached its peak output, it accounted for over 10 per cent of global manufacture), continued to decrease its manufacture, which fell to 728 kg in 2002.

92. Total exports of dextropropoxyphene increased through the 1990s to a peak of 133.4 tons in 2000 and then decreased significantly to 113.2 tons in 2001. Exports in 2002 showed only a slight recovery, to 119.0 tons. Italy remained the main exporter, with 73.0 tons (61.3 per cent of the world total); it was followed by India, with 29.7 tons (24.9 per cent of the world total). Far behind these two countries were France (6.2 tons), the United Kingdom (4.5 tons) and Switzerland (4.3 tons). Exports of dextropropoxyphene in quantities of between 350 kg and 100 kg were reported by each of the following countries (listed in decreasing order): United States, New Zealand, Belgium, Germany and Argentina. The United Kingdom and France continued to be the main importers during 2002, with 37.9 tons and 33.2 tons, respectively. They were followed by Pakistan (8.6 tons),[19] Hungary (7.3 tons), the Syrian Arab Republic (5.7 tons), Spain (4.0 tons) and South Africa (2.0 tons). Eight countries imported dextropropoxyphene in quantities of between 1 ton and 2 tons. Lesser quantities, ranging from grams to several hundred kilograms, were imported by 38 countries.

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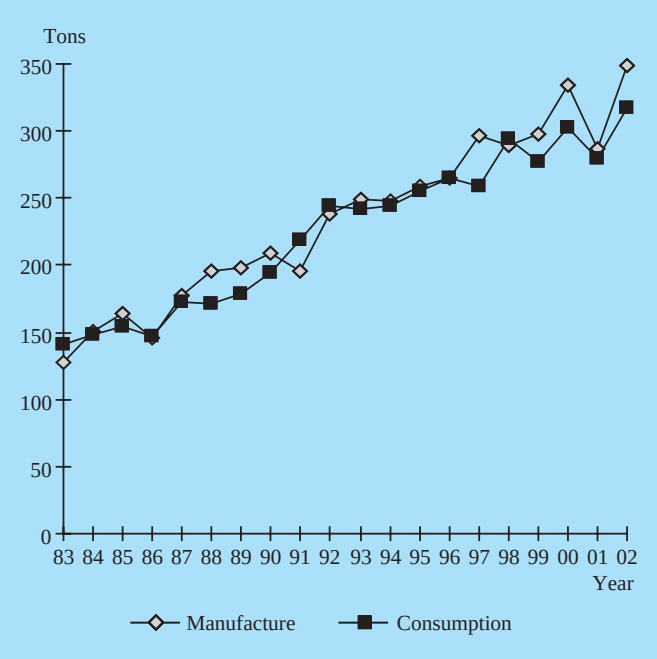
[17]Buprenorphine and pentazocine are synthetic opioids controlled by the1971 Convention. Comments on their licit movement are contained in *Psychotropic Substances: Statistics for 2002; Assessments of Annual Medical and Scientific Requirements for Substances in Schedules II, III and IV* (United Nations publication, Sales No. E.04.XI.3).

[18]In past years, this section also contained comments on the statistics related to anileridine. Since no manufacture of or trade in anileridine has been reported since 1999 and consumption and stocks of the drug have also decreased sharply, no comments on anileridine will be included in this publication in future unless there is a noteworthy change in the current situation.

[19]Statistical data on international trade for 2002 had not been received from Pakistan at the time of publication. Data on Pakistan's imports are therefore based on the information provided by the exporters.

Figure 28. Dextropropoxyphene: global manufacture and consumption, 1983-2002



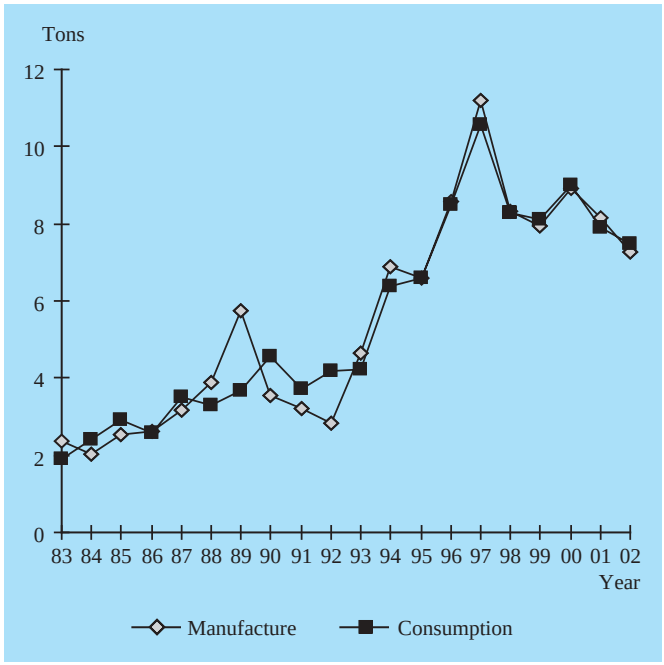
93. Dextropropoxyphene is consumed mainly in the form of preparations in Schedule III. Countries that report the utilization of dextropropoxyphene for the manufacture of preparations in Schedule III may also export those preparations. Though there have been occasional and slight decreases from one year to the next, the consumption of dextropropoxyphene has followed a largely upward trend in the past 20 years (see figure 28). Worldwide consumption of dextropropoxyphene in 2002 amounted to 316.7 tons (corresponding to almost 1.3 billion S-DDD), representing an increase of over 10 per cent from 2001, attributable in large part to the utilization of dextropropoxyphene for the manufacture of preparations in Schedule III. Approximately 98 per cent of total consumption of dextropropoxyphene in 2002 was for that purpose. The main countries reporting use of dextropropoxyphene for the manufacture of such preparations in 2002 were the United States (110.0 tons, or 34.7 per cent of the world total), followed by India (70.1 tons, or 22.1 per cent of the world total), France (54.5 tons, or 17.2 per cent of the world total) and the United Kingdom (39.6 tons, or 12.5 per cent of the world total).

94. Global stocks of dextropropoxyphene have fluctuated between 95 tons and 150 tons in the past decade, but remained relatively stable from 2001 to 2002, when they reached 137.0 tons. As in previous years, the United States held the highest stocks of dextropropoxyphene in 2002 (58.5 tons), followed by France (20.4 tons), Italy (14.8 tons), the United Kingdom (12.8 tons), India (11.9 tons), Hungary (6.0 tons), Pakistan (2.6 tons) and Mexico (2.0 tons). It is notable that the United States significantly increased its proportion of global stocks, from 30.3 per cent in 2001 to 42.7 per cent in 2002, while most other countries decreased it. Hungary also increased its stocks in line with the country's increased utilization of dextropropoxyphene for the manufacture of preparations in Schedule III. Thirty-six other countries accounted for less than 1 per cent of global stocks each.

Diphenoxylate

95. Although manufacture of diphenoxylate followed a generally increasing trend in the 1980s and 1990s, reaching a peak level of 11.2 tons in 1997, it has fluctuated around an average of 8.1 tons over the past five years (see figure 29). In 2002, global manufacture of diphenoxylate decreased to 7.2 tons, the lowest level since 1995, as a result of the reduction in the combined output of China and India. India accounted for 5.4 tons, or 74.3 per cent of global manufacture, followed by China (1.2 tons, or 16.7 per cent of global manufacture) and the United States (657 kg, or 9.0 per cent of global manufacture).

Figure 29. Diphenoxylate: global manufacture and consumption, 1983-2002



96. The average of global exports of diphenoxylate in the past 10 years has remained at 2 tons, since exports have fluctuated between 1.5 tons and 2.8 tons. Exports of diphenoxylate amounted to 2.7 tons in 2002, stable from 2001. India remained the principal exporter (2.4 tons, accounting for 90.4 per cent of the world total); followed by the United Kingdom (99.6 kg, or 3.7 per cent of the world total) and China (50.4 kg, or 1.9 per cent of the world total). The main importer continued to be the Islamic Republic of Iran (1.7 tons),[20] followed by the United Kingdom (279.0 kg) and Pakistan (251.1 kg).[19] These three countries accounted for 83 per cent of global imports, while eight other countries reported imports of diphenoxylate between 20 kg to 80 kg (for 12.4 per cent of the world total). Seventeen other countries reported imports under 20 kg.

97. Although worldwide consumption of diphenoxylate followed a clear upward trend until 1997, over the past five years it has fluctuated, amounting to 7.5 tons in 2002,

[20]Statistical data on exports and imports of narcotic drugs for 2002 had not been received from the Islamic Republic of Iran at the time of publication. Data on the country's exports and imports are therefore based on the information provided by its trade partners.

corresponding to approximately 500 million S-DDD (see figure 29). This shows a continuous decrease (17.3 per cent) from 2000 and the lowest level of consumption since 1995 (when it was 6.6 tons). Most consumption of diphenoxylate was in the form of preparations in Schedule III. The main countries reporting the use of diphenoxylate in 2002 were India (2.7 tons, accounting for 36.2 per cent of the world total), followed by the Islamic Republic of Iran (2.0 tons, or 27.6 per cent of the world total) and China (1.2 tons, or 16.7 per cent of the world total). Other countries reporting the use of diphenoxylate were the United States (493 kg), Pakistan (479.5 kg) and the United Kingdom (154.2 kg). Twenty-six other countries reported either the consumption of diphenoxylate or its utilization for the manufacture of preparations in Schedule III; those countries together accounted for the remaining 4.4 per cent of worldwide use.

98. Global stocks of diphenoxylate at the end of 2002 amounted to 2.8 tons, in keeping with the average in the past 10 years of approximately 3 tons, with a minimum of 1.9 tons in 1993 and a maximum of 4.1 tons in 1997. The largest stocks at the end of 2002 were held by India (1.0 ton), followed by Belgium (423.4 kg) the Islamic Republic of Iran (381.0 kg), Hungary (258.4 kg), the United Kingdom (230.9 kg) and China (190.2 kg). Twenty-six other countries held stocks of less than 100 kg and together accounted for approximately 11 per cent of global stocks.

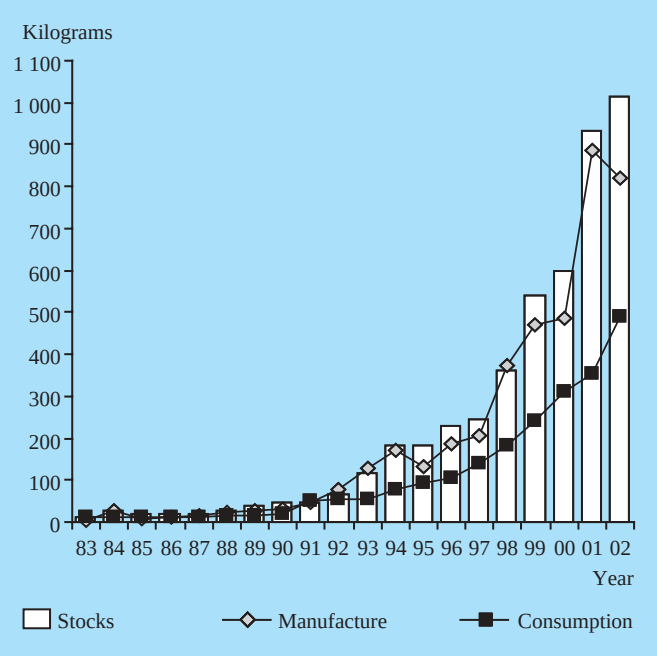
Fentanyl

99. Fentanyl, when used as an analgesic, is about 100 times more potent than morphine and is therefore used only in very small doses (for example, 0.005-0.1 milligrams in injectable form). Until the 1980s, fentanyl was mainly used for the induction of anaesthesia and, in combination with other substances, for a balanced anaesthesia in short-term surgical interventions. Since the early 1990s, however, controlled-release preparations (patches) of fentanyl have been used increasingly for the treatment of severe pain.

100. The use of some fentanyl analogues that are mainly used as anaesthetics, such as alfentanil, remifentanil, and, to a lesser extent, sufentanil, is also widespread. For example, imports of remifentanil, a substance that has been under the control of the 1961 Convention only since 1999, continued to increase and reached a total of 29.2 kg in 2002, and reported consumption of that substance more than doubled in the period 1999-2002. Global consumption of alfentanil, which has fluctuated in the last decade between almost 14 kg and 20 kg, was reported for 2002 as 17.4 kg. For sufentanil, global manufacture, consumption and stocks continued to increase in 2002 compared with previous years; total consumption of the drug stood at 1.6 kg.

101. Global manufacture of fentanyl, never exceeding 30 kg in the early 1980s, increased slowly until 1992. Since 1993, with the increased use of controlled-release preparations of fentanyl for the treatment of pain, growth has accelerated, reaching a level of 884 kg in 2001, the highest figure ever (see figure 30), mainly as a result of a marked increase in Belgium. During 2002, global manufacture dropped to 816 kg. Until 2000 the United States was the main manufacturer and during 2002 again became the main manufacturer, accounting with 583 kg for 71 per cent of the world total. In Belgium, which had manufactured 563 kg of fentanyl in 2001, output fell in 2002 to 206 kg. Manufacture of fentanyl

Figure 30. Fentanyl: global manufacture, consumption and stocks, 1983-2002



continues to proliferate to other countries; it increased in 2002 in Brazil (6 kg), China (1.8 kg), the Netherlands (14 kg) and Poland (1 kg), whereas it declined in the United Kingdom (2 kg). Latvia, Slovakia, Australia, Argentina, India and Germany, in descending order, reported manufacture of fentanyl in quantities below 1 kg, some of them for the first time ever. It should be noted that manufacturing losses and/or destruction reported by the main manufacturing countries averaged 25 per cent of the manufactured output (199 kg in total) in 2002.

102. The increase of global exports of fentanyl observed in the past two decades, starting from 6 kg per annum in the early 1980s, continued in 2002, when 238 kg were reported, the highest figure ever. In that year, Belgium continued to be the main exporter, having exported 189 kg, although its market share fell from 83 per cent in 2001 to 77 per cent, with the market share of the United States (31.7 kg) rising to 13 per cent. Other main exporters were the Netherlands (7.6 kg), the United Kingdom (4.3 kg), South Africa (3.6 kg), Sweden (2.2 kg) and Switzerland (1.1 kg). Germany continued to be the main importer (79 kg) in 2002; it was followed by France (25.3 kg), Canada (20.3 kg), Spain (17.5 kg), the United Kingdom (17.3 kg), the Netherlands (8.2 kg), Austria (6.3 kg), Japan (6.2 kg), Italy (5.8 kg), Sweden (5.6 kg), Denmark (4.9 kg), Australia (4.3 kg) and Switzerland (4 kg). Greece, Norway, Finland, Poland, Portugal and Ireland, in descending order, reported imports of fentanyl in quantities of between 2 kg and 3.5 kg.

103. As shown in figure 30, with the introduction of controlled-release preparations containing fentanyl in the early 1990s, global consumption of fentanyl began to grow at a rapid rate, attaining 489 kg in 2002, which represents an increase of 38 per cent over 2001. With a total of 815 million S-DDD consumed in 2002, fentanyl is one of the most widely used narcotic drugs; over 130 countries reported its consumption in 2002 and most developed and developing countries report that consumption of fentanyl continued to

increase in their territories. The United States, with 263 kg, remained the main consumer of fentanyl in 2002, followed by Germany (73 kg), France (24.8 kg), Canada (22.1 kg), Spain (17.5 kg) and the United Kingdom (13.4 kg). Ranked according to S-DDD consumed per million inhabitants per day, the main consumers in 2002 were the United States (4,380 S-DDD), Germany (4,082 S-DDD), Belgium (4,027 S-DDD), Denmark (3,693 S-DDD), Austria (3,483 S-DDD) and Canada (3,309 S-DDD). Nine other European countries reported consumption of over 1,000 S-DDD in 2002.

104. Global stocks of fentanyl, which had begun to increase in 1987, continued to rise, exceeding 1 ton for the first time in 2002. Belgium (597 kg) and the United States (345 kg) accounted together for 93 per cent of the total 1,016 kg held at the end of 2002 (see figure 30). Stocks of more than 1 kg of fentanyl were reported by Germany (21.2 kg), the Netherlands (12.5 kg), France and the United Kingdom (7.1 kg each), Brazil (4.7 kg), Japan (1.9 kg), Austria and Italy (1.6 kg each), Australia (1.4 kg), Sweden and Canada (1.2 kg each), Finland and Denmark (1.1 kg each), and Ireland (1.0 kg).

Ketobemidone

105. In the past decade, global manufacture of ketobemidone increased until 1999, when it reached 442 kg, but has significantly decreased since then. Also until 1999, Denmark was the only manufacturer of ketobemidone. The United Kingdom entered the market in 2000 and became the sole manufacturer in 2001. In 2002, the United Kingdom manufactured 98.2 kg of ketobemidone. Global exports of ketobemidone had increased continuously until 2000 (565.6 kg), but have decreased since then by over 60 per cent, to 222.9 kg, in 2002. The main exporter in 2002 was Germany (195.9 kg), which drew from stocks, followed by France (24.7 kg), Sweden (1.4 kg) and Denmark (0.9 kg). The main importer was Sweden (81.9 kg), followed by Denmark (72.3 kg), France (54.4 kg), Norway (21.5 kg) and Germany (10.5 kg). It should be noted that, in the case of France, ketobemidone is only imported for refinement and further re-export.

106. Global consumption of ketobemidone, which takes place almost exclusively in Scandinavia, continued to decrease in 2002 to 180.7 kg (corresponding to almost 3.6 million S-DDD), a reduction of more than 28 per cent from 2000. Denmark remained the main consumer of ketobemidone with 82.6 kg; it was followed by Sweden (75.9 kg), Norway (20.4 kg), Germany (1.3 kg) and Estonia and Iceland (less than 1 kg each). In 2002, the countries with the highest consumption of ketobemidone expressed in S-DDD per million inhabitants per day were Denmark (850 S-DDD), Sweden (469 S-DDD) and Norway (250 S-DDD).

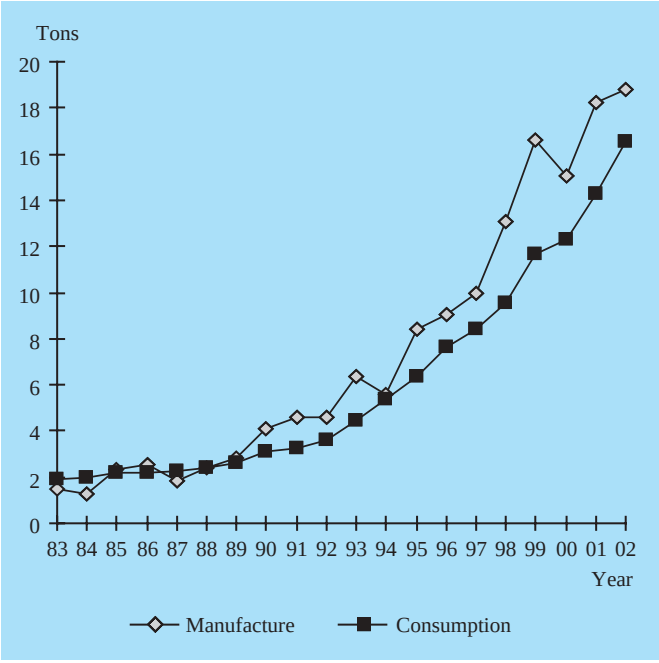
107. Global stocks of ketobemidone continued decreasing in 2002 to 253.2 kg, from their peak in 1999 (533.0 kg). Over the last three years, the almost 50 per cent reduction in stocks was due mainly to Germany, although that country still held the largest stocks at the end of 2002 (100.5 kg), followed by France (82.4 kg), Denmark (36.3 kg), Sweden (23.7 kg), Norway (7.5 kg) and the United Kingdom (1.9 kg). Estonia and Iceland held less than 1 kg each.

Methadone

108. Global manufacture of methadone continued its generally increasing trend of the past several years, reaching its highest level in 2002 at 18.7 tons (see figure 31). Despite a reduction in output from 2001, the United States remained the main manufacturer of methadone with 8.9 tons (47.7 per cent of global manufacture). The United States also reported destruction and/or losses of 3 tons in 2002, which corresponded to almost 34 per cent of methadone manufacture in the country. The reduction in manufacture in the United States was outweighed by increases in all other countries, but mostly Switzerland, the United Kingdom and Slovakia. Switzerland manufactured 3.3 tons of methadone in 2002, followed by the United Kingdom (2.9 tons), Spain (1.9 tons), Slovakia (882.0 kg), Italy (511.9 kg), India (181.5 kg) and Belgium (60.7 kg). It was the first time Belgium reported manufacture of methadone.

109. As in the case of manufacture, exports of methadone have followed a constantly increasing trend, reaching their highest level in 2002 at 6.9 tons (an increase of 23.1 per cent from 2001). Switzerland remained the main exporter with 2.6 tons (38.0 per cent of the world total), followed by the United Kingdom with 1.9 tons (27.1 per cent of total exports), Italy with 782.2 kg (11.2 per cent of total exports), Germany with 475.4 kg (6.8 per cent of total exports) and Slovakia with 470.7 kg (6.8 per cent of total exports). Five other countries reported exports of methadone in quantities between 50 kg and 200 kg. Germany remained by far the largest importer during 2002, accounting for 1.4 tons, which represented 22.6 per cent of the world total and an increase of almost 38 per cent from 2001. The other main importers were Italy (693.0 kg), Canada (682.2 kg), Australia (619.4 kg), Switzerland (481.3 kg), Denmark (339.0 kg), the Netherlands (285.8 kg) and New Zealand (201.5 kg). Nine other countries reported imports of methadone in quantities between 50 kg and 200 kg.

Figure 31. Methadone: global manufacture and consumption, 1983-2002



110. Although methadone is used in several countries for the treatment of pain, the sharp upward trend in its consumption is due to its growing use in the treatment of opioid addiction (see figure 31). Global consumption of methadone reached a record high in 2002, with 16.5 tons, an increase of 15.5 per cent over 2001. The United States remained the largest consumer with 8.7 tons (or 52.9 per cent of the world total) and was mainly responsible for the increase in the global consumption of methadone. The other major consumers were Spain (1.8 tons, or 10.8 per cent of the world total), Germany (916.2 kg, or 5.6 per cent of the world total) and Italy (812.5 kg, or 4.9 per cent of the world total). Consumption of methadone in quantities between 200 kg and 800 kg was reported by, in descending order, the United Kingdom, Canada, Australia, Switzerland, France, Denmark and Belgium, together accounting for 18.1 per cent of global consumption. Nine other countries and territories, mostly in Europe, reported consumption of methadone in quantities between 50 kg and 200 kg.

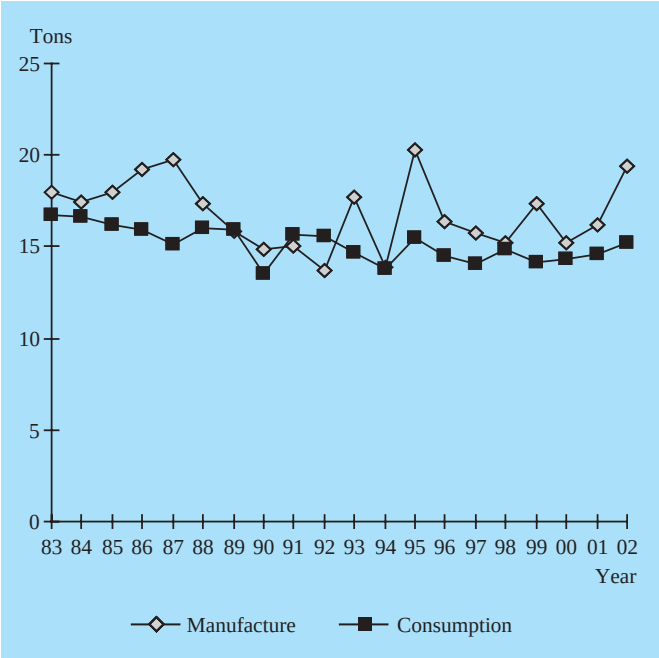
111. As in the case of manufacture, international trade and consumption, global methadone stocks showed a generally increasing trend during the 1990s, although they remained stable for 2000 and 2001, at approximately 11.6 tons. Stocks did increase slightly in 2002 to 12.6 tons, the largest portion of which was held by the United States (4.8 tons, or 38.5 per cent of global stocks); it was followed by Switzerland (2.5 tons), Spain (1.0 ton), the United Kingdom (598.2 kg) and Germany (567.1 kg). Stocks of methadone in quantities of 100-500 kg were held, in descending order, by Portugal, Italy, Slovakia, Canada, Australia, the Netherlands and Denmark, while 28 other countries held stocks of at least 1 kg.

Pethidine

112. Global manufacture of pethidine has fluctuated between 14 tons and 20 tons in the past 10 years (see figure 32). However, total manufacture has increased constantly since 2000, reaching 19.4 tons in 2002. The United States continued to be the main manufacturer, with 9.3 tons (48.1 per cent of global manufacture); it was followed by China (3.3 tons, or 17.0 per cent of global manufacture), Spain (1.9 tons, or 9.7 per cent of global manufacture), Germany (1.5 tons, or 7.6 per cent of global manufacture) and Slovakia (1.4 tons, or 7.2 per cent of global manufacture). The other manufacturers were the United Kingdom (960.8 kg), Brazil (811.7 kg), India (142.2 kg) and Japan (100.6 kg). It should be noted that Germany and the United States reported destruction and/or losses of approximately 20 per cent of pethidine manufacture.

113. Exports of pethidine, like manufacture, have fluctuated in the past 10 years, averaging 5.5 tons. Spain continued to be the main exporter in 2002, with 1.4 tons (or 26.8 per cent of total exports); it was followed closely by Slovakia (1.3 tons, or 24.2 per cent of total exports). Other exporters were the United States (814.8 kg, or 15.6 per cent of total exports) and Germany (484.9 kg, or 9.3 per cent of total exports). Nine additional countries exported between 50 kg and 200 kg of pethidine each. The main importer of pethidine remained Canada, with 707.9 kg, or 15.2 per cent of total imports. The other significant importers continued to be Australia (453.6 kg), South Africa (382.8 kg), Hungary (226.2 kg) and Austria (223.3 kg). Twenty-two countries imported quantities of between 40 kg and 200 kg.

Figure 32. Pethidine: global manufacture and consumption, 1983-2002



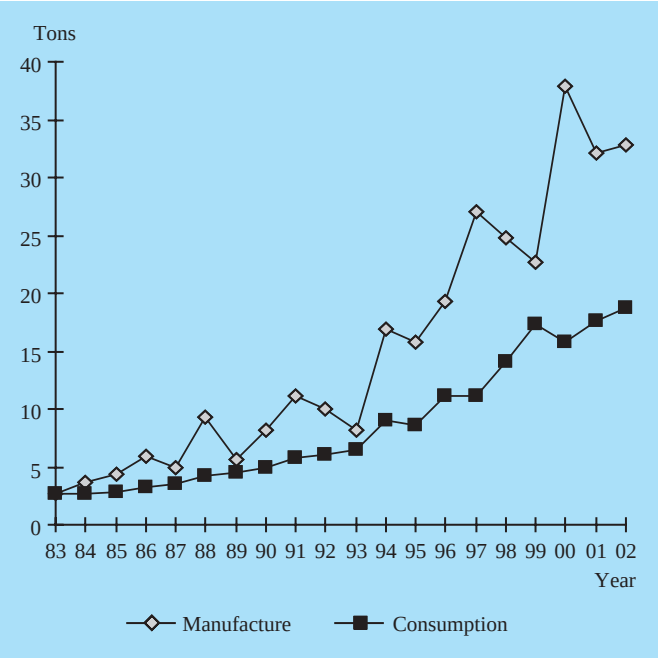
114. Annual global consumption of pethidine has not reflected the variations in manufacture and has remained relatively stable, averaging 14.5 tons in the past decade (see figure 32). In 2002, global consumption amounted to 15.1 tons (corresponding to approximately 38.0 million S-DDD), a slight increase of just over 4 per cent from 2001. The United States was again the main consumer (6.7 tons, or 44.2 per cent of global consumption). The other major consumers were China (2.5 tons, or 16.8 per cent of global consumption), Canada (967.8 kg, or 6.4 per cent of global consumption), the Islamic Republic of Iran (745 kg, or 4.9 per cent of global consumption) and Brazil (632.7 kg, or 4.2 per cent of global consumption). Seventeen other countries reported consumption of pethidine in quantities between 50 kg and 300 kg, together accounting for 16.9 per cent of global consumption. In 2002, the countries with the highest consumption expressed in S-DDD per million inhabitants per day were Canada (217 S-DDD), the United States (167 S-DDD), Denmark (114 S-DDD) and Australia (91 S-DDD).

115. After a slowly decreasing trend from 1997 to 2001, global stocks of pethidine recovered in 2002 to 15.7 tons. The United States held most of the global stocks of pethidine (7.1 tons, or 45.2 per cent), while Germany and China both held over 2.0 tons. Stocks of pethidine amounting to 200-750 kg were held by, in descending order, Spain, the United Kingdom, Australia, Canada, Thailand and Hungary, which together accounted for 15.0 per cent of the world total. More than 90 other countries held stocks of pethidine in smaller quantities.

Tilidine

116. Tilidine is manufactured and consumed mostly in Europe, although smaller quantities are also consumed in Australia and some African countries. Australia, Germany

Figure 33. Tilidine: global manufacture and consumption, 1983-2002



and Ireland import raw tilidine and refine it, removing organic material and separating and destroying one of its isomers, resulting in large processing losses that account for the difference between the total quantities of tilidine manufactured and consumed in the past few years (see figure 33). Global tilidine manufacture has followed a fluctuating, but generally increasing trend since 1993, from a minimum level of 8.2 tons in 1993 to 31.1 tons in 2002 (the peak was in 2000, with 37.8 tons). In 2002, Switzerland continued to be the main manufacturer of tilidine, manufacturing 16.6 tons and accounting for approximately half of worldwide manufacture. The other main manufacturers were Germany (11.1 tons, or 35.7 per cent of the world total), Belgium (2.6 tons, or 8.2 per cent of the world total) and Italy (885.0 kg, or 2.9 per cent of the world total). After reporting manufacture for the first time in 2001 (16.2 kg), Slovakia reported the manufacture of a tiny quantity in 2002.

117. Tilidine exports, which had grown through the 1990s and reached their highest level in 2000 (39.2 tons), have decreased continuously since then to 35.4 tons in 2002. The principal exporter of tilidine continued to be Switzerland, with 17.3 tons (or 48.8 per cent of the world total), which consisted exclusively of tilidine raw base exported to Germany. The other major exporters were Germany (8.6 tons, or 24.2 per cent of the world total), Australia (3.9 tons, or 11.2 per cent of the world total), Belgium (2.5 tons, or 7.0 per cent of the world total) and Ireland (2.2 tons, or 6.3 per cent of the world total). Italy, which exported 909.5 kg of tilidine to Germany in 2002, has shown a continuous increase since 2000. Four other countries together accounted for less than 1 per cent of global exports of tilidine. The main importers of tilidine for 2002 remained Germany (24.2 tons), Australia (5.5 tons), Ireland (2.4 tons) and Belgium (1.9 tons). Fifteen other countries together accounted for less than 2 per cent each of global imports of tilidine.

118. Global consumption of tilidine has continued to increase, reaching its peak level in 2002, with 18.7 tons (corresponding to approximately 93.5 million S-DDD). The main consumers were once again Germany, accounting for 16.7 tons (or 89.4 per cent of global consumption) and Belgium, accounting for 1.7 tons (or 9.1 per cent of global consumption). Fifteen other countries each accounted for less than 1 per cent of global consumption. In 2002, the countries with the highest consumption of tilidine expressed in S-DDD per million inhabitants per day were Germany (2,795 S-DDD), Belgium (2,301 S-DDD) and Luxembourg (1,110 S-DDD).

119. Global stocks of tilidine continued to increase, reaching 24.8 tons at the end of 2002, the highest level of stocks to date. The majority of stocks were held by Germany (15.3 tons), followed by Switzerland (3.0 tons), Italy (2.5 tons), Ireland (1.7 tons) and Australia (1.6 tons). Ten other countries accounted for the remaining 3.0 per cent of global stocks of tilidine.

Trimeperidine

120. Trimeperidine is manufactured and used almost exclusively in countries that were once part of the former Union of Soviet Socialist Republics. The manufacture of trimeperidine has fluctuated widely in the past decade, with a minimum of 1.4 kg in 1999 and a maximum of 469.5 kg in 2001. Global manufacture in 2002 was of 430.1 kg, manufactured mainly by the Russian Federation (395.2 kg, or 91.9 per cent of total manufacture). The other manufacturers were Ukraine (23.4 kg) and Kazakhstan (11.5 kg), while India reported, for the first time, the manufacture of a minor quantity. The main exporter of trimeperidine was the Russian Federation (17.8 kg), followed by Ukraine (9.0 kg) and Kazakhstan (2.8 kg). The main importer was Belarus, while the other importers, which imported minor quantities, were (in descending order) Latvia, Uzbekistan, Armenia, Kazakhstan, the Republic of Moldova, the Russian Federation, Kyrgyzstan, Georgia and Mongolia.

121. Reported consumption of trimeperidine in 2002 was 386.1 kg (corresponding to approximately 1.9 million S-DDD), which represents a nearly 24 per cent decrease from the 507 kg reported consumed in 2001. The Russian Federation consumed 315.2 kg in 2002 (81.7 per cent of global consumption), followed by Ukraine (31.0 kg), Belarus (18.1 kg), Kazakhstan (11.4 kg), Latvia (3.2 kg), Uzbekistan (2.9 kg), the Republic of Moldova (2.3 kg) and Kyrgyzstan (1.1 kg). Armenia and Georgia each consumed less than 1 kg of trimeperidine. In 2002, the countries with the highest consumption expressed in S-DDD per million inhabitants per day were the Russian Federation (30 S-DDD), Belarus (25 S-DDD) and Latvia (18 S-DDD).

122. As in the case of manufacture, stocks of trimeperidine have fluctuated widely in the past decade, reaching their lowest level in 1994, with 1.4 kg, and reaching a peak in 2002, at 172.3 kg. The Russian Federation held most of the stocks (134.9 kg, or 78.3 per cent), followed by Belarus (18.0 kg), Ukraine (9.8 kg), Uzbekistan (3.8 kg), Latvia (3.3 kg) and six other countries with less than 1 kg each.

Cannabis

123. Until 1999, the United States was the only country reporting licit production of cannabis, solely for scientific research, and annual production and consumption figures fluctuated widely between zero and 1.3 tons. Since 1999, production, utilization, trade and consumption of cannabis for scientific research on the efficacy of using cannabis extracts for medical purposes has also been taking place in the United Kingdom and, since 2001, in Canada, Germany, the Netherlands and Switzerland. Moreover, in Canada cannabis has been cultivated and consumed for medical purposes since 2001.

124. Global production of cannabis fluctuated until 2000 between 300 kg and 1.3 tons. It has increased sharply since then and in 2002 reached 5,400 kg, mainly because of increased production in the United Kingdom (2,996 kg), Switzerland (1,388 kg) and Canada (1,166 kg). The United States reported production of 839 kg. No production of cannabis took place in 2002 in Germany, where 6 kg of cannabis had been produced in 2001. In 2002 sizable exports of cannabis extracts related to research projects were reported for the first time, amounting to 306 kg, expressed in cannabis,[21] in total, with Switzerland (175 kg) and Germany (130 kg) being the main exporters. Germany was also the main importer, with 176 kg.

125. Global consumption of cannabis and cannabis extracts for medical and scientific purposes in 2002 also increased considerably compared with previous years, reaching 2,360 kg, more than double the amount in 2001, of which the United Kingdom (1,793 kg) accounted for 76 per cent. Other countries reporting utilization of cannabis for the manufacture of extracts or consumption of cannabis and/or cannabis extracts for 2002 were Switzerland (805 kg), Canada (505 kg), Germany (46 kg) and the United States (12 kg). Stocks of cannabis, which remained between 2 tons and 2.8 tons until 1999, reached 4.1 tons in 2001. At the end of 2002, stocks of cannabis in the United States stood at 3.4 tons. The other countries reporting cannabis stocks for 2002 were Switzerland (1,201 kg) and the United Kingdom (1,194 kg).

126. Sri Lanka has regularly released between 240 kg and 560 kg of seized cannabis for use for licit purposes (in Ayurvedic medicine), but has submitted no information since 2000. Jamaica also reported the regular release of seized cannabis (about 22 kg per year) for the manufacture of preparations used in the treatment of glaucoma and asthma up to 2000; since that year the respective quantities have increased to 250 kg of seized cannabis released in 2002 for such use.

Coca leaf and cocaine

Coca leaf

127. Bolivia and Peru continue to be the only producers[22] of coca leaf. Part of the coca leaf produced is exported to the United States and, in much smaller quantities, to countries in Europe, for the extraction of flavouring agents. Bolivia was the main exporter of coca leaf in the 1990s, accounting for more than 75 per cent of the world total until 1998, but has not furnished data on coca leaf production and stocks since 1987. Exports of coca leaf from Bolivia fluctuated and followed a downward trend during the 1990s. Since 2000, there have been no exports of coca leaf from Bolivia.

128. Data on the production of coca leaf in Peru showed a decline until 1999, in line with a decrease in the utilization of coca leaf and in the manufacture and consumption of cocaine worldwide. However, after 2000, production increased again and reached 3,143 tons in 2002. Similarly, utilization of coca leaf in Peru has increased since 2001, amounting to 2,989 tons in 2002. As the only exporter of coca leaf, Peru has also maintained exports at a higher level since 2000 compared with previous years.

129. Imports by the United States, the main importer of coca leaf, fluctuated in the last two decades. In the 1990s, imports declined gradually to 44 tons in 2000. In 2001, however, they increased again to 175 tons, but fell to 114 tons in 2002. Utilization of coca leaf in the United States for the extraction of flavouring agents and the manufacture of cocaine fluctuated in the past two decades, but followed a general downward trend. In 2002, such utilization amounted to 112 tons. For 2002, Peru reported, for the first time since 1997, utilization of coca leaf (20.3 tons) for the manufacture of cocaine. As in the past, at irregular intervals, Italy imported a consignment of 1 ton of coca leaf from Peru in 2002. Utilization of coca leaf in Italy has fluctuated in recent years between 128 kg and 256 kg. The Netherlands imported 500 kg of coca leaf in 2001, approximately 10 kg of coca leaf per annum were utilized in that country in recent years.

130. Global coca leaf stocks remained stable, averaging 1,430 tons between 1990 and 1998, but went down in 1999 and 2000. Since 2001 they have risen again, reaching 1,471 tons in 2002. In the 1990s, coca leaf stocks held by the United States in order to guarantee availability accounted for more than 95 per cent of global stocks. However, as in 2001, the share of global stocks held in the United States (1,083 tons) fell in 2002, reaching only 74 per cent, as a result of the increased stocks held by Peru (388 tons). Italy reported stocks of 877 kg for 2002, whereas the Netherlands, which held stocks of 567 kg at the end of 2001, did not report stocks of coca leaf for 2002.

Cocaine

131. Global manufacture of cocaine declined during the 1980s, from a yearly average of over 1 ton to about 900 kg. Between 1991 and 1999, global manufacture remained stable, averaging 500 kg. Since 2000, global manufacture

[21] For the calculation of estimates and statistics in accordance with the terms of the 1961 Convention, 1 kg of cannabis extract is equivalent to about 7 kg of cannabis.

[22] Coca leaf continues to be produced and used in Bolivia and Peru for purposes considered licit according to the legislation of those countries. Such production and uses are, however, not in line with the relevant provisions of the 1961 Convention.

has dropped, reaching 207 kg in 2002. That trend was due for the most part to the sharp decrease in manufacture in Peru, which fell from 407 kg in 1999 to 69 kg in 2002. In the United States, 132 kg of cocaine were manufactured in 2002. Global exports of cocaine also declined to 252 kg in 2002, with Peru remaining the main supplier, exporting 120 kg of crude cocaine in 2002. However, Peru's share in global cocaine exports fell to 48 per cent in 2002. The exports from Peru have been destined mainly for the United Kingdom, where cocaine is purified and re-exported for medical use. Exports of cocaine from the United Kingdom amounted to 71 kg in 2002, accounting for 28 per cent of the global total.

132. Between 1995 and 1997, Belgium released more than 50 kg of seized cocaine per annum for domestic medical use and for export. Since 2000, Belgium has followed that practice again: 150 kg of seized cocaine were released in 2002 and 31 kg of purified cocaine were exported to Canada and to other countries in Europe. For 1997 and 1998, the Russian Federation reported that seizures had also been released for that purpose. In the United States, seized cocaine is released and purified for use in veterinary medicine: 11.6 kg of seized cocaine were released for that purpose in 2002.

133. A downward trend was observed in global consumption of cocaine, which declined from 1.1 tons in 1980 to 264 kg in 2002 as a result of decreasing use of the drug in major consumer countries such as Canada, Germany and the United States. The United States remained the main consumer, with 101 kg of cocaine reported for 2002, followed by the United Kingdom (46 kg), Canada (19 kg) and Australia, Belgium and the Netherlands (13 kg each).

134. Global stocks of cocaine, which were above one ton until 1991, dropped in 1992 to approximately 850 kg and remained at that level until 2000. Since 2001, global stocks of cocaine have further declined and reached 630 kg at the end of 2002. Major stocks of cocaine were held by the United States (198 kg), Peru (77 kg), the United Kingdom (71 kg), Germany (83 kg), the Russian Federation (51 kg), Japan (36 kg) and Spain (29 kg).

SUPPLY OF OPIATE RAW MATERIALS AND DEMAND FOR OPIATES FOR MEDICAL AND SCIENTIFIC PURPOSES

1. The International Narcotics Control Board (INCB), in compliance with the functions assigned to it under the Single Convention on Narcotic Drugs of 1961 and the relevant resolutions of the Economic and Social Council, examines on a regular basis issues affecting the supply of opiate raw materials and the demand for opiates for licit requirements and endeavours to maintain a lasting balance between the two. The present document contains an analysis of the current situation.[1] Based on that analysis, INCB has made recommendations to maintain the balance between the supply of and demand for the opiates; those recommendations are included in chapter II of its annual report.[2]

Introduction

2. The analysis presented below has been prepared in accordance with the new methodology adopted by INCB in 2001, to the extent that the data received from Governments made this possible. It has been carried out separately for raw materials rich in morphine and opiates derived predominantly from those materials and for raw materials rich in thebaine and the opiates derived from them. Figures concerning the global utilization of opiate raw materials for the manufacture of opiates are used to assess the global demand for such raw materials (see para. 9 below). The stocks of opiate raw materials, considered separately from the stocks of final opiates, are examined together with the production of opiate raw materials when reviewing the global supply of those raw materials. The global consumption of opiates and stocks of those opiates are also included in the analysis, as appropriate.

3. The analysis is intended to complement the comments on the reported statistics (see pages 71-96 above) for individual opiate raw materials (opium, poppy straw and concentrate of poppy straw) and the opiates obtained from them, and readers are invited to turn to those comments for more in-depth information concerning individual narcotic drugs or poppy straw. In this part, the main focus is on the present situation, starting with the last four years for which statistical data are available. Data on production for 2003 are based on advance statistical information received from the main producing countries and data on production for 2004 are based on estimates submitted by Governments. Data on the demand for opiate raw materials and opiates derived from them for 2003 and 2004 are INCB projections based on past trends.

Supply of opiate raw materials

Production of opiate raw materials

4. An overview of global production of opiate raw materials from 1999 to 2002 and the projected production for 2003 and 2004 is given in tables 1 and 2, which show that the quantities of opiate raw materials produced by the main producing countries reached a record high in 2002. For morphine-rich raw materials, the rise in production was due to favourable weather conditions, increasing yields and expanded cultivation in most countries. In Spain, the total area harvested in 2002 (7,912 hectares) exceeded the estimated area confirmed by INCB (6,000 hectares). Australia, the largest producer in 2002, accounted for 34 per cent of global production expressed in morphine equivalent, followed by India (19 per cent), France and Spain (14 per cent each), Turkey (10 per cent) and Hungary (6 per cent). For opiate raw materials rich in thebaine, global production in 2002 amounted to 117 tons in thebaine equivalent, of which Australia, France and India accounted for 66 per cent, 22 per cent and 8 per cent, respectively.

5. According to the advance statistical data provided by the main producing countries, production is expected to increase further in 2003. For morphine-rich raw materials, global production is expected to reach 516 tons in morphine equivalent (see table 1). Owing to continued high agricultural yields, Australia is expected to remain the main producer, with 179 tons, and Turkey will become the second main producer, with 115 tons. The increase in Turkey is due to the excess of area actually harvested (99,431 hectares) over the total estimated area furnished by the Government in 2002, which was confirmed by INCB (70,000 hectares). Production is also expected to increase in France as a result of expansion of the area cultivated. India and Spain have reduced the area under opium poppy cultivation and a decline in production by those countries can therefore be anticipated compared with 2002. In Hungary, the severe drought of 2003 was the reason for the decline in production compared with 2002. As shown in table 2, production of opiate raw materials rich in thebaine is expected to continue to rise slightly in 2003, owing to higher yields anticipated by France, amounting to a total of 119 tons in thebaine equivalent.

6. According to the estimates submitted by the main producing countries, global production of opiate raw materials in 2004 is expected to decline somewhat, to 439 tons in morphine equivalent and 102 tons in thebaine equivalent. It should be noted that the decrease in the estimated total area under opium poppy cultivation for 2004 is more pronounced than the expected decrease in alkaloids to be obtained from such cultivation, as a result of continued technological progress in the cultivation of opium poppy experienced in several producer countries, in particular Australia. However, as in previous years, the actual production of poppy straw in 2004 will depend on weather conditions.

Global stocks of opiate raw materials and of opiates derived from them

7. As shown in tables 1 and 2, global stocks of opiate raw materials (including concentrate of poppy straw, which is an intermediary product) for both types of opiate raw material rose steadily in recent years and, since 2000, those stocks have been more than sufficient to cover the total demand for one year. In 2002, because of the record production in that year, the increase in stocks accelerated. At the end of 2002, India continued to hold the largest stocks (188 tons in

[1] The analysis excludes data on China and the Democratic Republic of Korea, which produce opiate raw materials solely for domestic use.

[2] *Report of the International Narcotics Control Board for 2003* (United Nations publication, Sales No. E.04.XI.1), paras. 156-168.

Table 1. Production of opiate raw materials rich in morphine, demand for opiates and balance between the two, 1999-2004

(Area harvested in hectares; production, demand, balance and stocks in tons of morphine equivalent)

	1999	*2000*	*2001*	*2002*	*2003*[a]	*2004*[b]
Australia						
Area harvested	11 555	15 166	8 925	11 701	9 811	7 400
Production	84	112	64	160	179	112
France						
Area harvested	6 091	5 914	5 402	6 451	7 850	7 500
Production	59	40	25	66	95	80
Hungary						
Area harvested	3 735	2 789	6 961	9 924	3 077	14 000
Production	2	4	18	28	10	32
India						
Area harvested	29 163	32 085	18 087	18 447	12 320	16 595
Production	118	146	85	90	55	79
Spain						
Area harvested	3 913	5 698	5 536	7 912	6 000	7 000
Production	18	35	37	67	52	60
Turkey						
Area harvested	87 193	27 554	45 836	50 741	99 431	70 000
Production	97	36	69	47	115	66
Other countries						
Area harvested	. .	. .	. .	. .	. .	. .
Production	8	8	9	8	10	10
Total area harvested	**141 650**	**89 206**	**90 747**	**105 176**	**138 219**	**122 495**
Total production (1)	**386**	**381**	**307**	**466**	**516**	**439**
Total demand						
For opiate raw materials (2)	**327**	**319**	**322**	**340**	**360**	**360**
Opium	72	69	67	75	. .	. .
Poppy straw and concentrate of poppy straw	255	250	255	265	. .	. .
For opiates for medical and scientific purposes[c] **(3)**	**263**	**255**	**266**	**266**	**290**	**290**
Balance						
(1) minus (2)	**59**	**62**	**–15**	**126**	**156**	**79**
(1) minus (3)	**123**	**126**	**41**	**200**	**226**	**149**
Stocks						
Opiate raw materials	**341**	**367**	**430**	**560**	. .	. .
Opium	119	187	200	213	. .	. .
Poppy straw	165	97	119	221	. .	. .
Concentrate of poppy straw	57	83	111	126	. .	. .
Opiates	202	202	202	215	. .	. .

Note: Two dots (. .) indicate that data are not available.

[a]Figures for 2003 are based on advance data submitted by Governments to the International Narcotics Control Board.

[b]Figures for 2004 are based on estimates submitted by Governments to the International Narcotics Control Board.

[c]Excluding demand for substances not covered by the Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol.

Table 2. Production of opiate raw materials rich in thebaine, demand for opiates and balance between the two, 1999-2004

(Area harvested in hectares; production, demand, balance and stocks in tons of thebaine equivalent)

	1999	*2000*	*2001*	*2002*	*2003*[a]	*2004*[b]
Australia						
Area harvested	1 978	5 479	10 369	7 865	7 637	6 800
Production	13	40	76	77	75	61
France						
Area harvested	1 822	1 883	2 157	2 533	1 650	2 000
Production	17	15	20	26	32	27
India						
Thebaine extracted from opium	12	15	9	9	6	8
Other countries						
Thebaine extracted from poppy straw	1	4	3	5	6	6
Total area harvested	**3 800**	**7 362**	**12 526**	**10 398**	**9 287**	**7 900**
Total production (1)	**43**	**74**	**108**	**117**	**119**	**102**
Total demand						
For opiate raw materials (2)	**16**	**37**	**73**	**54**	**60**	**60**
Opium	7	7	7	8	. .	. .
Poppy straw and concentrate of poppy straw	9	30	66	46	. .	. .
For opiates for medical and scientific purposes[c] **(3)**	**17**	**25**	**31**	**36**	**40**	**45**
Balance						
(1) minus (2)	**27**	**36**	**35**	**63**	**59**	**42**
(1) minus (3)	**26**	**49**	**77**	**81**	**79**	**57**
Stocks						
Opiate raw materials	**19**	**50**	**77**	**120**	**. .**	**. .**
Opium	12	19	20	21	. .	. .
Poppy straw	—[d]	13	35	67	. .	. .
Concentrate of poppy straw	7	18	22	32	. .	. .
Opiates	24	41	70	71	. .	. .

Note: Two dots (. .) indicate that data are not available.

[a]Figures for 2003 are based on advance data submitted by Governments to the International Narcotics Control Board.

[b]Figures for 2004 are based on estimates submitted by Governments to the International Narcotics Control Board.

[c]Excluding demand for substances not covered by the Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol.

[d]Data were not provided by countries.

morphine equivalent) in the form of opium (which is a source for extraction of morphine and thebaine), followed by Turkey, which continued to be the largest stockholder of concentrate of poppy straw. However, stocks of opiate raw materials rich in morphine also grew in the other producing countries. In that connection, INCB notes with satisfaction that Australia, France, Hungary, Slovakia, Spain, the former Yugoslav Republic of Macedonia and Turkey voluntarily provide the Board with data on stocks of poppy straw held in their countries; the Board invites other producing countries to do the same. The total share of stocks of morphine-rich raw materials held by the six main producing countries at the end of 2002 was 94 per cent. For stocks of raw materials rich in thebaine, Australia, France and India accounted in 2002 for 73 per cent of the world total. In view of the further rise in production of opiate raw materials in 2003, it is anticipated that stocks of opiate raw materials in the producing countries will continue to grow in 2003.

8. Global stocks of opiates based on morphine grew in the 1990s. Between 1999 and 2001, they remained stable at just above 200 tons in morphine equivalent. In 2002, those stocks increased to 215 tons, owing for the most part to an increase of stocks of codeine. Global stocks of opiates based on thebaine (that is, oxycodone and thebaine itself and, to a very small extent, oxymorphone) have grown sharply in recent years. Since 2000, stocks of thebaine-based opiates have also been more than sufficient to satisfy the global demand for them for one year, as can be seen in table 2.

Demand for opiate raw materials and opiates

9. Demand for opiate raw materials, unlike their production and stocks, is not reported by Governments. In the past, INCB reflected the global demand in global consumption of major opiates controlled under the 1961 Convention, expressed in morphine equivalent. However, by using that approximation the following were excluded: *(a)* demand for less commonly used opiates that are under international control; *(b)* demand for substances that are not under international control but are manufactured from opiate raw materials and for the consumption of which data are not available to INCB; and *(c)* fluctuations in utilization of raw materials due to short-term requirements by manufacturers. In the following analysis, the demand for opiates is measured in two ways: *(a)* by the utilization of opiate raw materials in order to reflect the demand by manufacturers; and *(b)* by global consumption of all opiates controlled under the 1961 Convention.

Demand for opiate raw materials

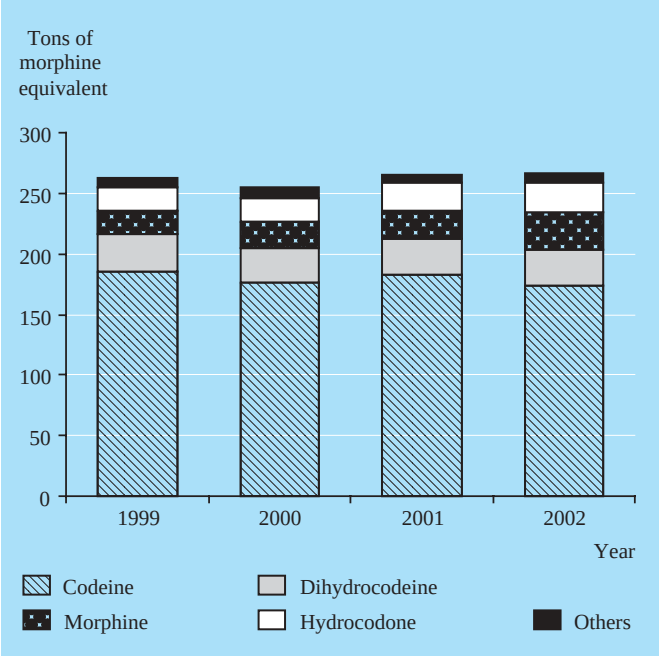
10. As shown in table 1, global demand for opiate raw materials rich in morphine, measured by their utilization for the extraction of morphine, was stable from 1999 until 2001 and increased in 2002. A general tendency to replace opium by concentrate of poppy straw as a raw material can be seen in the period under consideration, except for 2002. In 2003 and 2004, global demand is expected to rise to approximately 360 tons in morphine equivalent. The increase is anticipated to affect only the demand for concentrate of poppy straw, since it is caused mainly by the demand in the Islamic Republic of Iran, which in the past released seized opiate raw materials for licit purposes, but has been importing concentrate of poppy straw from licitly producing countries since 2002.

11. Global demand for opiate raw materials rich in thebaine is measured by their utilization for the extraction of thebaine. Demand for such raw materials other than opium increased substantially until 2001, but dropped in 2002, owing to the accumulation of vast stocks of opiates based on thebaine. Because of the large stocks of oxycodone and thebaine held at the end of 2002, the demand for raw materials rich in thebaine is not expected to exceed 60 tons of thebaine equivalent in 2003 and 2004.

Demand for opiates

12. Consumption data of all opiates based on morphine and thebaine that are under international control have been used to assess the demand for such opiates; however, the present analysis does not include consumption of substances not under international control, since it is not reported to INCB. The figures for global demand for morphine-based opiates given below are higher than the corresponding figures included in previous INCB publications on the subject, when the consumption of only some narcotic drugs was included. Figure I provides a breakdown of the demand for morphine-based opiates expressed in morphine equivalent, by narcotic drug. Global demand for morphine-based opiates has increased slightly in recent years, mainly because of the increase in the consumption of hydrocodone and morphine in some developed countries. Demand for opiates

Figure I. Consumption of opiates manufactured from morphine, in tons of morphine equivalent, 1999-2002



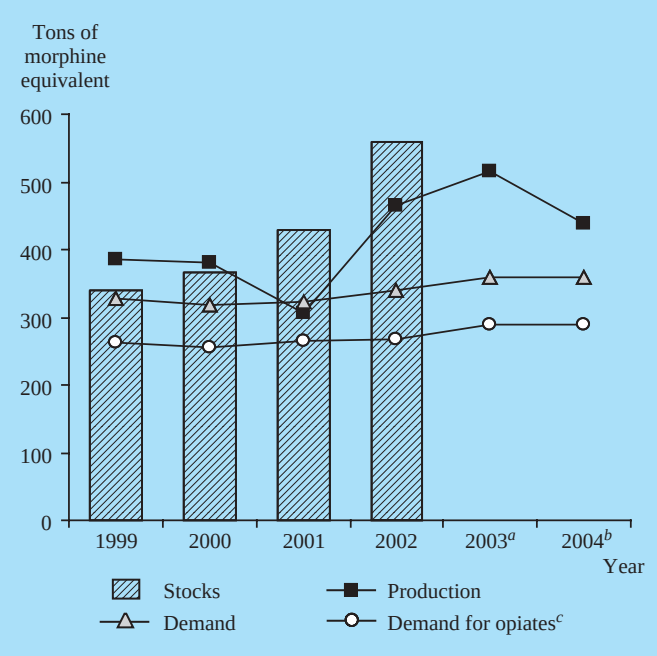
in developing countries is expected to increase only slowly, as a result of continued awareness-raising efforts by INCB and the World Health Organization to ensure the adequate availability of such drugs. Total demand for opiates based on morphine is expected to continue to rise in 2003 and 2004 to 290 tons in morphine equivalent.

13. Demand for thebaine-based opiates (measured as the consumption of such opiates, currently reported mainly by the United States of America) increased until 2002. In 2003 and 2004, that increase in demand is expected to continue, albeit at a slower rate, as consumption of oxycodone is also expected to rise in other countries. Global demand in 2004 is expected to reach approximately 45 tons in thebaine equivalent.

Balance between the production of opiate raw materials and the demand for opiate raw materials

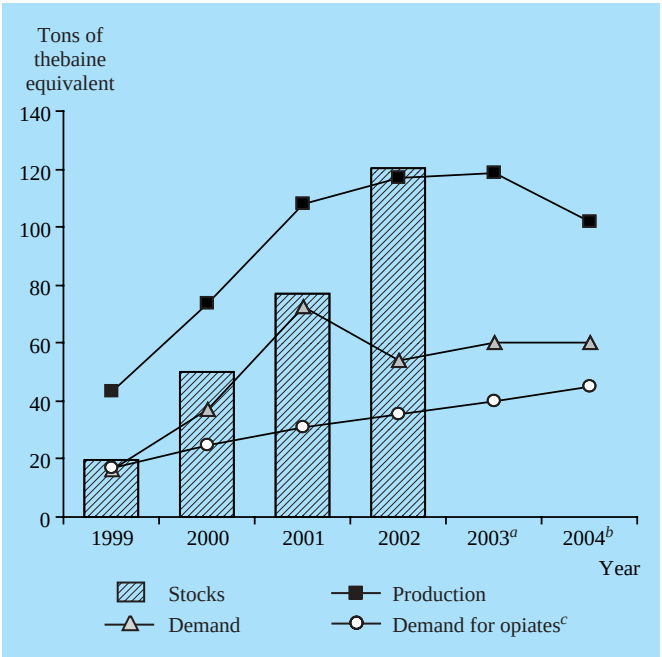
14. As can be seen in figures II and III, global production of both types of opiate raw material considerably exceeded global demand in 2002. That is likely to occur again, but to an even greater extent, in 2003. According to the information currently available, for raw materials rich in morphine, a total of 516 tons is expected to be produced during 2003, which is 156 tons (40 per cent) more than the demand for such raw materials. For raw materials rich in thebaine, production of 119 tons is anticipated, although half of that amount would be sufficient to satisfy global demand. In 2004, production is expected to decline in most producer countries and the situation will therefore improve somewhat. However, also in 2004, production will continue to exceed demand for morphine-rich raw materials (by 79 tons or more than 20 per cent) and for thebaine-rich raw materials (by 42 tons or 70 per cent).

Figure II. Supply of and demand for opiate raw materials rich in morphine, in tons of morphine equivalent, 1999-2004



[a]Data for 2003 are based on advance data submitted by Governments.
[b]Data for 2004 are based on estimates communicated by Governments.
[c]Excluding substances not covered by the 1961 Convention.

Figure III. Supply of and demand for opiate raw materials rich in thebaine, in tons of thebaine equivalent, 1999-2004



[a]Data for 2003 are based on advance data submitted by Governments.
[b]Data for 2004 are based on estimates communicated by Governments.
[c]Excluding substances not covered by the 1961 Convention.

Trends in the production and export of opiate raw materials by India and Turkey

15. In 2003, the INCB decided to include in the present publication an overview of the trends in the production and export of opiate raw materials by two traditional supplier countries, India and Turkey. The paragraphs below therefore focus on describing the relative importance of the production and exports of opiate raw materials reported by these two countries compared with global production and exports over the last two decades. Data for the remaining producing and exporting countries are included in the analysis, but are examined in less detail.

16. For the production of raw materials rich in morphine, the data for India and Turkey, expressed in morphine equivalent, are compared with global production in figure IV, whereas figure V shows the same comparison for other producing countries. As can be seen in the two figures, India was consistently the largest producer of morphine-rich raw materials in the 1980s. While the output in individual countries fluctuated, production by India and Turkey together accounted throughout that period for more than 45 per cent of the global total. From 1990 to 1993, owing to low production in India, the combined share of global production of opiate raw materials accounted for by India and Turkey dropped to only 30 per cent. Since that time, the combined share of global production accounted for by those two countries has fluctuated between 29 per cent (in 2002) and 55 per cent in 1995; however, in the years 1995, 1997 and 1999-2001, it was 45 per cent or higher.

17. The above developments have to be seen in connection with the major changes in global production of opiate raw materials (expressed in tons of morphine equivalent) in the period under consideration, shown in figures IV and V. While global production dropped between 1983 and 1989, since then it has followed a rising trend, in particular, in the other producing countries. However, as can be seen in figure IV, during the last decade production expressed in morphine equivalent has also increased substantially in India, where a peak was reached in 2000, and in Turkey, which reported for 1999 the highest figure ever.

Figure IV. Production of raw materials rich in morphine in India and Turkey, 1983-2002

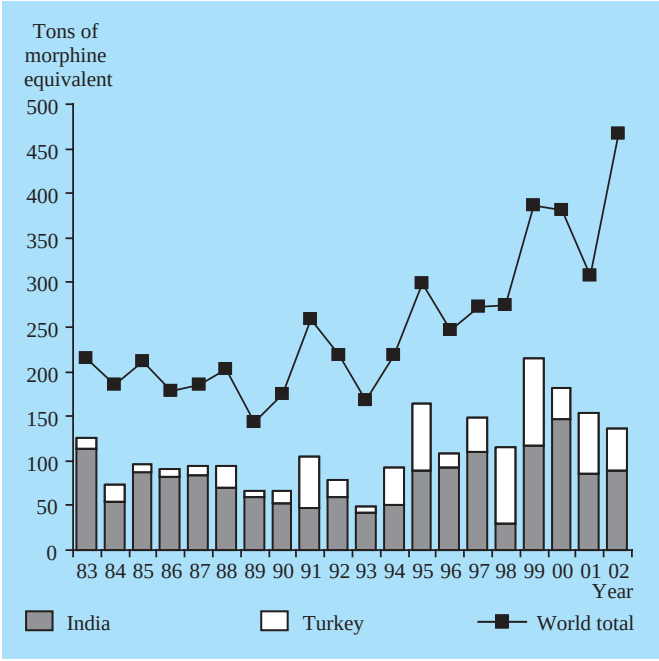


Figure V. Production of raw materials rich in morphine in producing countries other than India and Turkey, 1983-2002

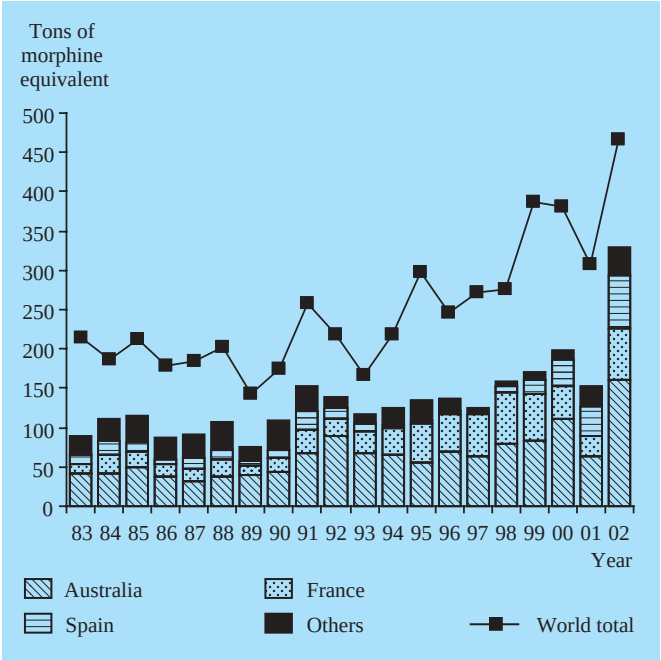


Figure VII. Exports of raw materials rich in morphine from producing countries other than India and Turkey, 1983-2002

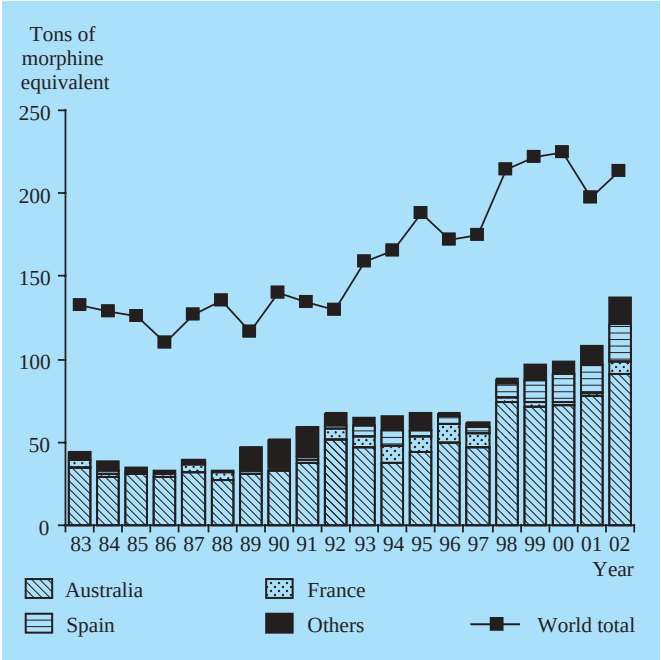
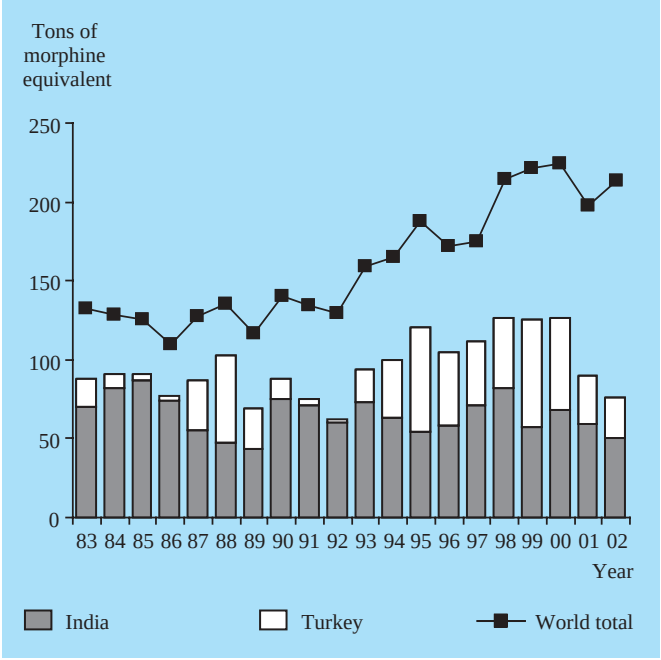


Figure VI. Exports of raw materials rich in morphine from India and Turkey, 1983-2002



18. Figures VI and VII show exports of raw materials rich in morphine by India and Turkey and by other producing countries, respectively, compared with total exports of such raw materials. Until 1998, India and Turkey (the latter only in 1988 and 1995) were the main exporters of opiate raw materials. Together they accounted for two thirds of total exports during most of that period; however, from 1991 to 1992 their combined share dropped to just over 48 per cent, owing to low exports by Turkey, and in 1998 it dropped to 59 per cent. Since the mid-1990s, global exports of opiate raw materials started to rise, mainly as a result of increasing exports by other producing countries, as shown in figure VII. In 1999, exports of opium from India dropped by almost 30 per cent and since 2000 those exports have declined further, reflecting the increasing demand for concentrate of poppy straw rather than opium as the main raw material for the extraction of alkaloids. As a result of all the above, the combined share of India and Turkey declined from 56 per cent in 1999 to 36 per cent in 2002.

19. Figure VI also shows that exports of opiate raw materials (expressed in morphine equivalent) from India and especially from Turkey fluctuated widely during the last two decades. From 1984 to 1986 and in 1989, global exports of such raw materials fluctuated as well, declining or rising with the exports of India or Turkey; that trend has changed since the mid-1990s, when global exports started to rise as a result of increasing exports by other producing countries. While India's exports of opiate raw materials remained more or less at the same level throughout the period under consideration, apart from the fluctuations mentioned above, exports from Turkey were generally higher in the 1990s than in the 1980s.

20. For opiate raw materials rich in thebaine, India, as the sole licit supplier of opium, was the only producer and exporter until 1998, since at that time thebaine was extracted almost exclusively from opium. Since 1999, with the introduction of poppy straw rich in thebaine, India's share of production dropped steadily and reached less than 8 per cent in 2002. With regard to exports of those raw materials, India's share also declined rapidly, from 37 per cent in 1999 to 6 per cent in 2001; in 2002, when global exports of concentrate of poppy straw rich in thebaine or oripavine dropped considerably, it rose again to 16 per cent. Turkey does not produce or export opiate raw materials rich in thebaine.

Economic and Social Council resolutions on demand for and supply of opiates for medical and scientific purposes

21. In its resolution 2003/40 of 22 July 2003, on the demand for and supply of opiates for medical and scientific purposes, the Economic and Social Council urged all Governments to continue to contribute to the maintenance of a balance between the licit supply of and demand for opiate raw materials for medical and scientific purposes, the achievement of which would be facilitated by maintaining, insofar as their constitutional and legal systems permit, support to the traditional and legal supplier countries, and to cooperate in preventing the proliferation of sources of production of opiate raw materials; urged governments of all producer countries to adhere strictly to the provisions of the Single Convention on Narcotic Drugs of 1961 and that Convention as amended by the 1972 Protocol, to take effective measures to prevent illicit production or diversion of opiate raw materials to illicit channels, especially when increasing licit production, and welcomed the study carried out by INCB on the relative merits of different methods of producing opiate raw materials; and urged Governments of consumer countries to assess their licit needs for opiate raw materials realistically and communicate those needs to INCB in order to ensure easy supply, and requested the Governments of producer countries to ensure that their future production of opiate raw materials was adjusted to conform to the actual requirements for opiate raw materials worldwide, bearing in mind the current level of global stocks of opiate raw materials, and to cooperate in preventing the proliferation of sources of production of opiate raw materials.