

**Monitoring the production and
trade of chemicals used in drugs
production**



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Introduction

Owners of sheds and warehouses are pressured for the creation of a drug lab, the environment is seriously polluted as a result of the dumping of chemical waste, liquidations take place in the street and building facades are blown up with explosives. These words were said by Dutch Minister Yeşilgöz-Zegerius, who issued a warning about the current state of the Netherlands. Without decisive action, this situation is poised to persist and worsen over time. This is why more than 100 chemical raw materials for the production of hard drugs were banned here (Ministerie van Justitie en Veiligheid, 2023).

Beyond the Dutch borders, similar issues persist in various regions. An international group of researchers, the SCORE group (Sewage analysis CORE group Europe), analyzed the wastewater of more than 60 million people in 120 cities in 37 countries. This research shows substantial levels of cocaine in cities throughout western and southern Europe, such as in the United Kingdom, Spain, Italy, France, and Switzerland. Notably, there is a significant amount of amphetamine use in Belgium. Eastern European regions, including Slovakia, the Czech Republic, and eastern Germany, emerge as hotspots for methamphetamine. Furthermore, a distinct and steadily rising surge in drug use is evident in central Europe (Emske et al., 2019). This highlights the important need to address this escalating global concern. It is imperative to foster international cooperation and implement regulations in the chemical trade to effectively resolve this issue. Only through united decisive efforts on a global scale can we bring about a meaningful solution.

Definition of Key Terms

Drug precursor

Drug precursors are chemicals and mixtures/natural products containing them that can be used for the illegal manufacture of narcotic drugs and psychotropic substances. Drug precursors themselves generally do not have a psychoactive effect (*What Are Drug Precursors? | Ravimiamet*).

Scheduled substance

Controlled (scheduled) drugs, substances, and certain chemicals are ones whose use and distribution are tightly controlled because of their abuse potential or risk (*Controlled drugs | Texas State Board of Pharmacy*).

Non-scheduled substance

Any substance which is identified as having been used for the illicit manufacture of narcotic drugs or psychotropic substances (European Union LEX).

Operator

Any natural or legal person engaged in the placing on the market of scheduled substances.

User

A natural or legal person other than an operator who possesses a scheduled substance and is engaged in the processing, formulation, consumption, storage, keeping, treatment, filling into containers, transfer from one container to another, mixing, transformation or any other utilization of scheduled substances.

Wastewater analysis

Wastewater analysis evaluates water quality using chemical Test Kits. A water sample undergoes chemical introduction, causing a colour change, which is compared to a chart to identify specific substances. This method extends beyond conventional water testing to detect stimulant drugs (cocaine, amphetamine, methamphetamine, MDMA/ecstasy, ketamine) and cannabis in the water sample (Parkerizing, 2022).

Chemical trade regulation

The regulation of chemicals is the legislative intent of a variety of national laws or international initiatives such as agreements, strategies or conventions. These international initiatives define the policy of further regulations to be implemented. Often, regulatory agencies oversee the

enforcement of these laws. This research report will focus on drugs (recreational and pharmaceuticals).

Drug regulation

Drug regulation is the control of drug use by international agreements and/or by regulatory authorities such as the US Food and Drug Administration (FDA), the European Medicines Agency (EMA) and the Japanese Pharmaceutical and Medical Devices Agency (PMDA). This includes regulations concerned with the development, approval, manufacturing and marketing of drugs.

General Overview

History

Medicines have existed since ancient times, but their regulation is a relatively recent development. Particularly concerning recreational use, the oversight by the law is a more modern phenomenon, because in history it had more to do with personal moral considerations. An ancient example dates back to 120 years before the birth of Christ when Mithridates VI, the king of Pontus, formulated a medicinal concoction named after himself, Mithridatium. This potion made up of 41 different elements was seen as a remedy for all difficulties or diseases, used for more than 1500 years. The regulation of this ultimately useless drug only happened in 1540 by the English pharmaceutical inspections under the Apothecaries Wares, Drugs and Stuffs Act. While certain proclamations were made by specific governments and various guilds across Europe issued rules, ranging from the Salerno Medical Edict by Fredrick II of Sicily in 1240 to the issuance of the first Spanish Pharmacopoeia in 1581, the historical significance only becomes relevant in the 19th century (Rägo & Santoso). It is during this period that alchemy has transitioned into chemistry. This period is furthermore marked by the centralization of actual scientific principles.

The history of drug regulation in the United States started in 1848 but only addressed imported drugs (Office of the Commissioner, 2018). Furthermore, in the 19th century, federal regulation on this matter was not present, this issue remaining primarily a local endeavor. This decentralized approach resulted in an imperfect scenario where laws varied significantly from state to state. This situation persisted for half a century. The absence of federal oversight on the production and trade of chemicals used in drug production, led to many actions that were detrimental to public health. Despite a major opium epidemic in China at the end of the 19th century, there was little interest in suppressing a business that was so profitable for many

merchants, shippers, bankers, insurance agencies and governments. The prevalence of economic interests at the forefront hindered the implementation of many social measures during this period.

But by the beginning of the 20th century, the global trade in drugs was becoming a global problem which required a global solution, which was actively worked on. Because of anti-opium activists, the first international conference on narcotic drugs was held in Shanghai in 1909, paving the way for the International Opium Convention of the Hague in 1912. Over the next fifty years, a multilateral system to control the production, trafficking and abuse of drugs was developed. Three drug control conventions were adopted by the United Nations in 1961, 1971 and 1988. Adherence to these now is almost universal (Chawla et al., 2008).

Challenges and emerging threats

In 2020, an estimated \$10 billion in cryptocurrency found its way into criminal activities (*Payment Through Cryptocurrencies*). Cryptocurrency's decentralized and anonymous traits make it well-suited for supporting the illicit trade of chemicals crucial in drug production. Operating without a central authority, cryptocurrencies function in a peer-to-peer manner, often eluding traditional financial institutions or regulatory oversight. The anonymity provided further complicates efforts to trace and identify transaction participants. It fosters an environment ideal for covert dealings linked to illegal drug production. This threat is only escalating swiftly.

Beyond the corruption of individuals, illegal drugs also corrupt institutions. The complexity of addressing this issue stems from its infiltration into numerous national institutions. Primarily, cocaine and marijuana have served as tools to sway many law enforcement officers. The culture of silence, coupled with an intricate understanding of the law enforcement systems, renders the eradication of corruption and bribery nearly impossible within both national and international police forces.

Illicit drug economies also result in deforestation, monocultures, water and soil pollution, and a high carbon footprint from in-house cultivation (GPDPD). This issue is not only a human one but also influences nature significantly. In countries like Bolivia and Peru, coca leaf cultivation in fragile ecosystems and natural parks causes deforestation and loss of natural habitats. The illegal production and trade of cocaine are directly responsible for the loss of more than 35,000 hectares of natural forest in the Amazon rainforest alone.

Technological advances

Drug cartels have been found to use computers and electronic PDAs to keep vital records such as bank details, contact of associates, assets databases and financial transactions, sales registers, business particulars, secret landing strip coordinates and synthetic drug manufacturing recipes. But on the other hand, technology is also used against drugs. The Therapeutic Education System (TES) uses computer-generated video scenarios based on real-life situations that are simulated in the classrooms. An example is a video about saying no to drugs that shows a girl refusing substances being offered by some friends.

Timeline of Key Events

Throughout history, there have been multiple key events that are related to the chemicals used in the production of drugs as well as to the distributing and trade of those chemicals globally and making it accessible in every single country.

Date

30th of March 1961

Event

The Single Convention on Narcotic Drugs was adopted by the United Nations Conference for the Adoption of the Single Convention on Narcotic Drugs, held from the 24th of January till 25th of March in 1961. (United Nations Treaties Collection, z.d.) The aim of the Convention was to control the creation and distribution of narcotic drugs and the chemicals needed to produce the drugs.

21st of February 1971

The Convention on Psychotropic Substances was adopted by the United Nations for the Adoption of a Protocol on Psychotropic Substances, held from the 11th of January till 21st of February 1971 in Vienna. (United Nations Office on Drugs and Crime (UNODC), 1971) The aim of the Conventions was to introduce an international control system for psychotropic substances by controlling multiple synthetic drugs by their abuse potential and therapeutic value. (United Nations Office on Drugs and Crime (UNODC), z.d.)

19th of December 1988

The United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances was adopted by the United Nations Conference for the Adoption of a Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances, held from 25th of November till 20th of December in Vienna. (United Nations Office on Drugs and Crime (UNODC), 1988) The aim of the Convention was to take measures against drug trafficking and the trade of the precursor chemicals as well as international cooperation. (United Nations Office on Drugs and Crime (UNODC), z.d.)

21st of December 1990

Establishment of the United Nation Drug Control Program (UNDCP). It had the responsibility to oversee all drug control related issues and programs in the United Nations system. (The Netherlands and you, z.d.)

1997

Establishment of the United Nations of Drugs and Crime (UNODC) by merging the United Nations Drug Control Program (UNDCP) and the United Nations Centre for International Crime Prevention. Its purpose is to help all Member states in their battles against crime, illegal drugs and terrorism in all its forms. (The Netherlands and you, z.d.)

15th April 1999 – 30th June 2000

Operation Purple was a code name for an operation that had the goal to identify as many illegal shipments as possible with a chemical compound that is crucial in the production of cocaine. During the operation, 1200 pounds of the chemical

compound were prevented from being traded.
(International Narcotics Control Board (INCB), 2000)

January 2019

The International Narcotics Control Board released a report called 'Precursors and chemicals frequently used in the illicit manufacture of narcotic drugs and psychotropic substances in 2018'. (International Narcotics Control Board (INCB), 2019)

26th of June

International Day against Drug Abuse and Illicit Trafficking. (United Nations Office on Drugs and Crime (UNODC), z.d.)

Major Parties Involved

United Nations Office on Drugs and Crime (UNODC)

The UNODC serves as the main coordinating body for international efforts against drug trafficking, money laundering and related activities such as precursor chemical controls.

International Narcotic Control Board (INCB)

INCB is a body independent of the United Nations, it monitors and encourages compliance with international drug control treaties. It has close ties with local governments to enforce the trade of precursor chemicals in line with these conventions.

World Customs Organization (WCO)

WCO encourages cooperation and coordination between customs authorities by giving them an opportunity to work together. It is part of greatly accessories the customs in fighting illegal trafficking in drugs and precursor chemicals.

Organization for the Prohibition of Chemical Weapons (OPCW)

Albeit primarily dedicated to banning chemical weapons, the OPCW also joins initiatives aimed at preventing performances in chemicals diversion for illegal drug production.

European Union (EU)

The EU separately regulates the production and trade precursors in its member states. Drug trafficking is fought collectively as Europol, EU's law enforcement agency takes a lead in coordinating the various initiatives as they are being implemented.

United States (DEA, FDA)

However, a major role in precursor monitoring and control is undertaken by the Drug Enforcement Administration (DEA). Under the umbrella of the Food and Drug Administration (FDA), there are some chemicals that regulated in pharmaceutical manufacturing.



Figure 1: Global drug trafficking routes

China

Precursor chemicals is a mistake for the product meant as its China has said to manufacture and export precursors. Strict measures have been put in place by the Chinese government to govern production and exportation of these chemicals through a joint effort with international organizations.

India

In short, India is the other big country that manufactures pharmaceutical products and chemicals. The country works with international organizations and adopts the rules that control whether chemicals can be diverted to illicit drug production.

Mexico

A significant source country for illegal drug activities, Mexico cooperates with international counterparts in controlling the chemicals that help to manufacture drugs.

Colombia

Cocaine-producing countries such as Colombia cooperates with international organizations in the management of chemicals which are used to manufacture unknown products.

Russia

Russia is also actively engaged in international anti-drug trafficking measures such as the regulation of precursor chemicals.

Possible Solutions

Strengthening Global Cooperation

International collaboration is one easily discernible apex of the facilities and capabilities that are essential in monitoring chemicals used for yielding drug products. Nations can effectively collaborate closely by a mechanism that encourages nations to work together. An alternative idea focuses on establishing an international marketplace for the exchange of information, which allows nations to privately connect and share details. Furthermore, coordinating regulatory frameworks in this world requires an effort it has to synchronize all the activities and ensure that there is a unified reaction with regard to challenges presented by the illicit drug trade. In addition to this, the creation of international task forces that are comprised of different law enforcers from various nations may result in an organized system which will seek not only interrupting consignment transports but also disintegrating large-scale global criminal organizations involved with illegal drug manufacturing and trade. At this point, such a choice for an option suggests collective and multilateral approaches that will help strengthen the capacities of the national level to ensure proper tracing as well as manage precursor chemicals.

Harnessing Technological Innovation

The approach of advancing technologies complements the vast ability to conduct monitoring activities in terms of drug production. The blockchain technology thus emerges, as a powerful weapon instructed by its capacity to ensure that everyone is able and free to view the supply chains without making attempts to edit or interfere in any way. Through this technology, all transactions – from processing through to the delivery channel are fully captured. Data analytics and AI play an essential part by providing an initiative-taking system that anticipates the risk likelihood based on

predictive modeling techniques or machine learning algorithms. This enables regulators to stay on top of the troubling new adaptations used by criminal associations. In addition, the operation of smart sensors and IoT technology throughout the supply chain at strategic points can keep precursor chemicals under real-time monitoring since any deviation from normal behavior will prompt an immediate alert. Combining such technologies diversifies and modernizes the monitoring facility, making it possible to effectively combat illegal methods of manufacturing drugs that are constantly becoming more complicated.

Building Partnerships and Strengthening Capacity

The key factor in the proper monitoring of drugs produced with chemicals is empowering both these entities. Targeted training programs meant to enhance the capacity of law enforcement agencies, customs officials and regulatory authorities are a necessary steppingstone. Besides, an emphasis on establishing public-private partnerships is required to create a teamwork environment. This involves mutual information sharing and collaboration by regulatory agencies and industries manufacturing precursor chemicals involved in the production or trade of this chemical. Tax benefits and simplified licensing procedures for industry compliance can provide incentives that justify the efforts of actors in the private sector to achieve regulatory objectives.

This solution stresses the analysis of creating a situation in which elements of both public and commercial sectors would use an active process related to monitoring and controlling the supply chain. In this way, however, it promotes flexibility ensuring the possibility of a variety of worlds' entities to interpret and adjust different strategies which are related to specific environments at a regional or national level.

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