



Jonas Hartelius

# Monitoring and scheduling of new drugs in Sweden

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#### SWEDISH CARNEGIE INSTITUTE SWEDISH NARCOTIC OFFICERS' ASSOCIATION

CARNEGIE INTERNATIONAL REPORT SERIES 3 STOCKHOLM 2012 A note to the reader:

This text is intended for informational purposes only. For legal issues, the reader is referred to Swedish original law texts, administrative statutes, court decisions etc.

For "Nikko", who knows why.

#### Author

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### Foreword

The rapid development of new dependence-producing substances and new modes of distribution on a global scale has created new challenges to public authorities and law enforcement agencies involved in drug control. Some of the challenges include the tracking of new substances, documenting their effects and risks, scheduling them as narcotic drugs, and, when scheduled, stopping the unlawful importation and sale of the substances.

The Swedish Carnegie Institute (SCI) and the Swedish Narcotic Officers' Association (SNPF) have for many years been involved in this field. Since 1983, SCI has been assessing new drugs to provide summaries for police investigators, prosecutors and courts. SNPF, through its members, is a steady source for reports and warnings about new drugs or drug-related hazards.

The joint SCI-SNPF publication *Narkotika, dopningsmedel och hälsofarliga varor* ("Narcotic drugs, doping agents and goods hazardous to health", Swedish, ed. Jonas Hartelius, 11<sup>th</sup> ed., 2012) has for many years been a standard text on the contemporary drug situation for the training and educating of law enforcement and treatment staff, teachers and the public. It is being regularly updated to describe recent additions to the Swedish and international drug panorama.

In this separate report, Mr. Jonas Hartelius gives a detailed description of the systems used for monitoring and scheduling new drugs in Sweden. The two main texts were originally published through the SNPF Journal (2006) and the SCI homepage (2010). For this report, the author has updated and edited the texts. The report has been produced within the SCI research programme "The foundations and development of drug control".

The publishers hope that this report will help create an understanding of the problems encountered and the methods available when dealing with the threat to public health and public order caused by the increasing supply of new dependence-producing substances.

Stockholm and Gothenburg in April 2012

*Peder Langenskiöld* Executive Director Swedish Carnegie Institute (SCI) *Mika Jörnelius* Chairman Swedish Narcotic Officers' Association (SNPF)

## 1. Strategic monitoring of new drugs in Sweden and internationally

#### Introduction

The rapid introduction of new substances of abuse all over the world has created a need for systematic monitoring of the field. Here, some of the methods and channels used will be addressed, as well as some major classes of intoxicating drugs likely to become widely abused in the future.

### Intelligence about new drugs in the future (I): Sources of knowledge about new drugs

In the post-war period, the Swedish panorama of drug abuse has become much broader. Amphetamine was the first drug to be widely abused, already in the 1940s. Marijuana was introduced in the 1950s. Hashish smoking spread rapidly all over the country in the 1960s. The mid-1970s saw heroin getting a lot of attention due to a number of fatal overdoses. In recent years, a number of drugs have been introduced on the Swedish illegal market, among them kath, mushrooms containing psilocybine, and ketamine.

The question here is if it is possible to predict which new drugs are likely to appear in the future? The question is important from many points of view:

• From the point of view of information services in order to provide clear messages about effects, intoxication symptoms, risks etc. to professionals, parents, media and others.

• From the point of view of medical services in order to educate and train medical staff about the risks of e.g. overdoses, serious abstinence reactions, dangerous reactions and long-term injuries and to prepare purposeful countermeasures. • From the point of view of law enforcement and customs enforcement in order to draw attention to new drugs and preparations, paraphernalia etc. to be searched for during raids and other interventions.

• *From the point of view of forensic science* (police forensics and forensic medicine) in order to set up routines, provide reference substances etc. for the analysis of seizures and specimens.

• *From the point of view of governmental administration* in order to schedule new drugs as narcotic drugs (or similar).

• *From the point of view of jurisprudence* in order to make assessments of the hazards associated with new drugs, in order to develop standards for sentencing when new drugs appear in narcotic drug cases.

#### Sharp observations

Through history, a number of important discoveries have been made by pure coincidence. The ability to make unexpected discoveries and put them to beneficial use has been called "serendipity" (Roberts, 1989). The expression originates with Robert Walpole, who in a letter 1754 wrote about an old Arabian legend "Three Princes from Serendip" (today's Sri Lanka). During their travels, the princes always made fortunate discoveries. In a more general sense, serendipity is a matter of being able to discover more or draw more far-reaching conclusions than other people in an unexpected situation. Another side of this ability is to perceive what could happen, e.g. crimes or accidents. The observer is not able to control the emergence of the situation, only his or her awareness, observations and conclusions.

In the field of drug abuse, a number of discoveries have been serendipitous. In 1954, Dr. Nils Bejerot, when he was acting medical adviser to the Child Welfare Board of the City of Stockholm, discovered the first case of intravenous drug abuse among Swedish youth. As this case did not fit into the established clinical or scientific image of drug addicts, he realised that this was a new social phenomenon. His warnings about this problem, however, fell on deaf ears for a long period. (Bejerot, 1968, pp. 136 ff.)

In 1982 a number of physicians in California discovered severe

cases of Parkinson's disease in a small group of opiate abusers, i.e. "frozen addicts". These turned out to have paralysing nerve damages caused by the substance MPTP, which can be an inadvertent by-product in the synthesis of the opiate MPPP. The discovery was important also to scientists studying Parkinson's disease and to narcotic officers. (Valter & Arrizabalaga, 1998, p. 147)

Drug abusers can also stumble upon interesting drug effects, such as the conscious abuse of flunitrazepam as a "strategic drug" to overcome their anxiety during crimes.

Legal and ethical obstacles, such as secrecy surrounding patient data and rules for experiments, often make it necessary to wait for "natural experiments" to study certain varieties of drug abuse. No pharmaceutical company would have been permitted to test large doses of the cough depressant dextrometorphan to see if it could produce hallucinations, but that is exactly what American college students did on their own and thereby created a new pattern of drug abuse.

A basic scepticism is recommended when making forecasts. It is necessary to watch out for exaggerations. Not every premonition materializes: PCP was abused for a short period in Sweden in 1978, but it never became popular in large circles. Home produced "kompot" (low quality heroin) from dried poppy capsules occurred in our country during a period in the 1990s, but it seems to have disappeared completely. Some preparations remain rare, e.g. cannabis extract.

Is it possible to put serendipity and attentiveness into a system in order to have early warnings about new narcotic drugs or other drugs? It is a feature of most definitions of "creativity" and "the future" that none of them can be managed or predicted. There are, however, methods to make better use of novel observations and fresh ideas – also in the drug field.

#### Analyses of the external world

In recent years, police and customs work has become more intelligence based. It means that operations are based on analyses of

the external world and strategic planning. Intelligence usually refers to "the information – questions, insights, hypotheses, evidence – relevant to policy" (Wilensky, 1967, p. viii), i.e. information used for decisions. To be accepted as intelligence and not just perceived as rumours, the process must, according to Godfrey and Harris (1971, p. xiii), deal with "information which has been processed – collected, evaluated, collated, analysed and reported". The work requires a systematic approach and a long-term perspective.

The intelligence function is sometimes also called "analysis of the external world". In a wide sense, this consists of a person or an organization "with a purpose related to their own operations investigating parts of their surroundings" (Furustig & Sjöstedt, 2000, p. 7), i.e. simply trying to find out what is going on "out there". In the field of drug control, this function may attend to changes in e.g. production processes, transport routes, smuggling methods and other modus operandi and to new patterns of abuse and problems associated with the intake of drugs (e.g. crimes).

The models for modern police and customs intelligence systems are usually taken from military activities, hardly ever from epidemiological or economic activities. The latter types of activities have, however, helped surveying the local spread of drug abuse and to trace the money within the illegal drug trade.

#### Important sources

Knowledge and early warning about individual new drugs can be drawn from many sources:

*Ethnobotanics* is the discipline studying medical and religious use of plant drugs in traditional cultures (see e.g. Efron et al., 1979; Emboden, 1979). Recent examples of widely abused drugs found through this knowledge base are ephedrine (from *Ephedra* plants) and *Salvia divinorum*.

*Drug literature* includes a wide variety of publications, from large scientific standard works (see e.g. Martindale, 2011) to personal narratives about drug-related experiences (see e.g. Shulgin & Shulgin, 1991, and Shulgin & Shulgin 1997).

*Research reports* describe e.g. new pathways for synthesis and new varieties of drugs. They can be a source for independent producers when it comes to finding new drugs, which in many cases are not formally scheduled as narcotic drugs.

*Industrial trade reports* about the handling of precursors can indicate activities within odd groups who are not involved in any legitimate handling of the chemicals and thus may be suspected of unauthorized production of new drugs.

*Clinical and social experiences* about drugs and abuse patterns, new types of drug-related injuries etc. can give early warning of new drugs about to enter the market. For many years in the 1970s, the Dependence Treatment Service at Ulleråker Hospital in Uppsala was a primary source for reports on new narcotic drugs. In some cases, they picked up indications of new types of drug abuse up to two years before the police made seizures of them. The Haight Ashbury Free Clinic (HAFC) in San Francisco has for decades been a primary source for American news about new drugs and new patterns of abuse.

*Forensic* (technical, medical etc.) information about the composition of drugs (incl. tracer analyses of impurities from syntheses), fatalities etc. can give indications of new drugs. This was the case with fentanyl, when the substance started occurring on the Swedish market in 2003. In 2008 "spice" was launched on the internet, and it took some time before the intoxicating ingredient was identified as one of a number of synthetic cannabinoids.

*Police reports* about the illegal market, including the "talk of the town" about new drugs in the drug subculture, can serve as a basis for more systematic operations against new forms of illegal handling. In recent years in Stockholm, this has been the case with abuse of buprenorphine (Subutex<sup>®</sup>).

*Net sites* can provide information ranging from chemical facts about the production and composition of new drugs to detailed recommendations about personal intake to achieve certain effects. The sites can be comprehensive and well documented (see e.g. Erowid).

*Media monitoring* of trends in other countries, especially those with open drug cultures, can give early warnings about the drugs

which young people are like to encounter while travelling abroad, such as ecstasy varieties in the Netherlands or methamphetamine tablets ("yaba") at vacation spots in Southeast Asia.

*Fictional literature* has for many years contained stories about drugs and drug sensations. De Quincey's *Confessions of an English Opium Eater* (1821) and Baudelaire's *Artificial paradises* (1860) upon their publications and a long time thereafter created an interest in opium and hashish as intoxicants. In the mid-1960s they found new readerships. Aldous Huxley's narrative about mescaline intoxication in *Doors of Perception* (1954) created a literary vogue around hallucinogens. Anthony Burgess in his *A Clockwork Orange* (1962) described the strategic use of drugs ("drencrom", "synthemesc" and "vellocet") in reinforced milk drinks ("milk plus mestos") by gang members as a part of their preparations for nightly fights, rapes etc. just for the pleasure of it. To some extent Burgess gave a foreboding of the strategic use of flunitrazepam for the perpetration of premeditated crimes.

Many of the abovementioned sources are utilized also by the pharmaceutical industry in their search for new medicinal drugs.

#### Many systems

A number of authorities, organizations and institutions put together material about global and national drug trends.

Within the *United Nations* (UN), the *World Health Organization* (WHO) produces reviews of new drugs, to be used as documents when considering the scheduling of preparations as narcotic drugs or psychotropic substances. The *United Nations Office on Drugs and Crime* (UNODC) every year publishes the World Drug Report about the international drug situation.

*Interpol* (ICPO) and the *World Customs Organization* (WCO) monitor and report the development of serious criminality involved in drugs, its modus operandi, routes etc.

In the *United States of America*, federal authorities have set up a nationwide network, the Drug Abuse Warning Network (DAWN), in order to catch early indications of new drugs and new patterns

of abuse. A number of treatment institutions, laboratories, forensic pathology departments and others report new findings, such as fatalities and psychoses. The findings are put together to indicate trends. They serve as a basis for information to treatment staff about new emergency conditions. Other American authorities, primarily the Drug Enforcement Administration (DEA), use information about seizures of new preparations, new criminal modus operandi etc. as material for strategic scenarios covering various types of drugs.

Within the *European Union* new drugs and new patterns of drug abuse are reported to the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), which is carrying out risk evaluations. The EU is developing new routines for reporting drug abuse and joint scheduling of new drugs.

In *Sweden* the drug intelligence function is limited. The main agencies are the Swedish National Association for Alcohol and Drug Education (CAN), the National Poisons Information Centre (GIC), the Medical Products Agency (LV), the National Police Crime Unit (RKP), the National Public Health Institute (FHI) and the Customs Authority. The Swedish branch of the Scandinavian NADIS drugs monitoring network coordinates drugs intelligence gathering at the strategic level. Independent groups, such as Criminals Return In Society (KRIS), the Swedish Carnegie Institute (SCI) and the Swedish Narcotic Officer's Association (SNPF) and specialized news desks, such as Drugnews, also follow current drug trends.

The Swedish Prosecution Service (Åklagarmyndigheten, 2005; 6<sup>th</sup> ed., 2011), through its Development Centre Stockholm, has published an extensive study of new drugs, which can be expected to appear in drug cases before Swedish courts

## Intelligence about new drugs in the future (II): Early warnings about new drugs

#### 300 drugs under control

Today, only about 300 drugs (and an estimated 50 mushrooms containing psilocine or psilocybine) are scheduled as narcotic drugs etc. in Sweden. Of this group, about two dozen are abused more regularly, and an additional small number occurs sporadically.

Almost all of the new drugs, which have been introduced in our country in the last decades have been introduced through contacts with the drug markets and drug cultures in other countries.

For further searches, one could start by asking how many drugs exist "out there". The answer is that nobody knows, as many substances have not been investigated as to their possible abuse as intoxicants. Their effects and potential for abuse can vary enormously. In the groups, which have been examined more closely, there are several thousand with varying effects. Valter and Arrazibalaga (1998, p. 7) have estimated the number as follows ("psychotomimetic" means hallucinogenic):

• psychotomimetic phenetylamines ("PEA-drugs"): 250 (including a number of ecstasy varieties);

 psychotomimetic indolalkylamines: 250 – 300 (including tryptamines such as DMT);

- LSD analogues: 10;
- synthetic cannabinoids: 10;
- phencyclidines: 50 (PCP etc.);
- deliriants: 50 (JB-336 etc.);
- central stimulants: 100 (amphetamine varieties etc.); and
- opiates 500 4 000 (of which 1 400 are fentanyls).

For the group of synthetic cannabis, recent developments have made it clear that the number of substances in this group must be more than a hundred. Particularly prominent is the JWH group (named after Dr. John W. Huffman, a pioneer in developing and testing new cannabinoids). To the list above, one can add hundreds of indigenous drugs, e.g. kratom (*Mitragyna speciosa*) and harmalines, to this list. The number of intoxicants will be even larger if combinations (polydrug abuse) are taken into account.

#### **Global forecasts**

Some scientists have tried to summarily describe drugs or groups of drugs expected to receive increased attention in the future. Most commonly, they focus on drugs which are known to experts.

Alexander Shulgin, who is one of most important drug chemists of the post-war period, in an overview (Shulgin, 1975) remarked that a large part of the development of new drugs is performed clandestinely by drug chemists working outside the control of the establishment and having completely different expectations of the drug effects. What may be regarded an unwanted side effect in medical treatment (e.g. hallucinations) may be regarded as the desirable effects in non-medical consumption. Shulgin has also noted that most of the drugs which are possible in many classes, e.g. 4 000 meperidines (with the infamous MPTP), have not been studied clinically.

Also, Cooper (c. 1988) drew attention to drug chemists as important actors in the future drug panorama: for this group of chemists it is rational to synthesize the drugs which have the highest possible potency in order to reduce their risk exposure to law enforcement but also to extend their illegal activities. As an example he mentioned that competent chemists in a week are able to synthesize 10 kilograms of fentanyl, which after cutting corresponds to 40 tons of heroin (of street quality) in the illegal market.

A more wide-reaching forecast of the future drug panorama has been done by Schmidbauer & vom Scheidt (2004, pp. 368 ff.). They have set their focus on six "drug fields", where psychotropic substances can be expected to play a major role:

• *Hedonism* is a pleasure-oriented life style. Here, drugs can be used to produce pleasant drug experiences; this is a continuation of

the human tendency to get intoxicated since the days of Noah (Gen. 9). New drugs for this purpose can be ecstasy varieties.

• *Escapism to "the other side"* aims at achieving some kind of final exodus from this troublesome world. An example given is PCP.

• *Euthanasia* with medicinal drugs and other drugs can be performed not only for relieving pain and shortening life but also for changing the attitude of the patient towards life and death. The latter aspect was researched in the 1960s by Stanislav Grof. Examples are heroin and LSD.

• *Therapy* with drugs for drug problems can include new substances such as ibo-gaine for the treatment of chronic drug addicts. This is still in the experimental stage. Other scheduled drugs which have been tried for therapeutic purposes are e.g. buprenorphine (Subutex<sup>®</sup>), but this drug has spread to the illegal market.

• *Military and police operations* can use drugs as chemical weapons (e.g. fentanyl used at the storming of a theatre in Moscow 2002) but also to increase the performance and endurance in combat (e.g. modafinil, which is being used in Afghanistan).

• *Mind-expanding use of drugs* received attention already in the 1950s and 1960s by Aldous Huxley, Timothy Leary and others. The purpose can be anything from increasing one's wakefulness to opening the "doors of perception", e.g. through the use of hallucinogens.

The actual supply of new intoxicating substances can be influenced by an increased production of "designer drugs". These are substances which have effects similar to scheduled substances but which are not under formal control as narcotic drugs etc. at their time of introduction on the drug market. With the growing availability of internet information about drug production we may also risk the emergence of a small scale industry ("cottage industry") with many home producers of drugs that are easy to manufacture (such as ephedrone, GHB, marijuana etc. and in some cases even ecstasy varieties). We will likely also see an increased abuse of drug mixtures in ever more sophisticated forms. Here, Shulgin and Shulgin (1991 and 1997, respectively) have written with deep insight about very special procedures with precise timing of the administration of the drugs in order to make different intoxicating effects replace each other with more pleasant continuation, plateau and detoxication effects.

#### Imaginable new drugs in Sweden

Forecasts of the future are most easily done upon the assumption that the overall conditions of society will be unchanged. Thus: The Swedish drug epidemic continues to spread and keeps maintaining a market with a stable demand and a considerable interest for fashionable new preparations. The drug market is globalised ever more with an increased exchange between drug cultures. Information and propaganda about drugs and patterns of abuse overflow the internet. New drugs are being introduced successively, but not at the same rate as on some of the hottest drug scenes in Europe.

For our preparedness, the easiest and most reasonable assumption would be to first study the drugs which occur in other countries and can be easily imported. Thus, we ought to be observant on the following substances.

*Cannabis preparations* can include stronger marijuana ("netherweed" etc.). "Drug hemp" can be clandestinely grown in plantations of "fibre hemp" financially supported by the EU. Cannabis extract is likely to remain rare, as it is difficult to handle because of its liquid form. The introduction of medicinal preparations, such as Sativex<sup>®</sup> (in December 2011), will likely call for closer surveillance of the risk for diversion.

*Central stimulants.* Amphetamine will likely dominate the Swedish segment of synthetic central stimulants. Both methamphetamine and phenmetrazine have occurred periodically in Sweden and can be expected to re-occur. Of particular interest is the extensive abuse of methamphetamine tablets ("yaba") among tourists in South East Asia. Medium strong central stimulants, such as modafinil (Alertec<sup>®</sup>, Modiodal<sup>®</sup> etc.), can become attractive for socially established professionals in high speed sectors, such as IT and media. Their use would then have the purpose of maintaining high levels of wakefulness and activity during long periods (more than 24 hours). Within these particular groups, there has been a marked "epidemic"

of narcolepsy (a disease with compulsive sleep attacks; the disease is a correct medical indication for the prescription of modafinil) in Great Britain in recent years. Also, methyl phenidate (Ritalina®) can be abused with supplies from medical sources, in particular if the prescription of the substance for hyperactivity among children and young people becomes more and more frequent. Ephedrine is another central stimulant likely to become more abused in the future. Desoxypipradrol (2-DPMP) became a fashionable substance around 2010 and was scheduled in September 2011.

*Hallucinogens* include e.g. a number of phenethylamines ("PEAdrugs") with ecstasy varieties (see e.g. Shulgin & Shulgin, 1991). Within the group of tryptamines there are several LSD analogues. Many have been described by Shulgin and Shulgin (1997). This group also includes DMT, which has gained an almost cult-like status as an instrument for research near death experiences (see e.g. Strassmann, 2001). Furthermore, ketamine can be expected to become more widely abused. A recent addition to the panorama of hallucinogens is methoxetamine ("ROFLCOPTR"), which was identified by the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) in 2011 and described as having dissociative properties (causing a feeling of the mind leaving the body). It has been mentioned as a typical drug specifically designed for introduction on the internet market.

*Kath drugs*. Ephedrone (methcathinone) can be produced in simple kitchen laboratories from common chemicals, e.g. ephedrine. Often the resulting substance has a considerable concentration of impurities, which has been seen in toxic Sudafed<sup>®</sup> batches in the Baltic states. Sudafed<sup>®</sup> is a registered medicinal drug which is used against nasal congestion. It contains ephedrine. Through a simple synthesis using potassium permanganate (KMnO<sub>4</sub>), ephedrine can be changed into ephedrone. The residue of potassium permanganate in the doses consumed during abuse is regarded as a contributing factor to severe neurological disorders with Parkinson-like symptoms in ephedrone abuse. Cathine (X-112) is a medium strong central stimulant which is being abused in certain body-building circles in order to be able to keep on training for longer periods. A number of new synthetic

cathinones, such as butylone, mephedrone and methedrone, appeared as intoxicants in Sweden in the years 2008-2009 and were scheduled as narcotic drugs. The group of synthetic cathinones is expected to contain an additional number of intoxicants.

Medicinal (pharmaceutical) drugs are commonly demarcated to include only drugs against anxiety and sleep disturbances. A number of benzodiazepines (i.a. bromazepam and likely also nitrazepam) can probably serve as substitutes for flunitrazepam for strategic use in crimes. Large parts of the panorama of depressant or disinhibiting substances (such as barbiturates, which are being abused to a large extent in South Africa) can be suspected of having a potential for this kind of use. Also, methaqualone (Mandrax® etc.) is being abused in many countries. "Poppers" (isobutyl nitrite etc.) has a high potential for abuse in connection with intense sex. Prozac<sup>®</sup> (Fontex<sup>®</sup>, Seroxat<sup>®</sup> etc.; active substance fluoxetine; slang name "vitamin P") is being prescribed against depression, compulsive and panic syndromes etc. It is anxiety reducing. The substance is not dependence producing in a classical sense, but it causes both physical and psychological abstinence reactions when it is being rapidly discontinued after an extended period of use. In some cases, its abuse has lead to suicidal behaviour and psychoses. It is being abused contrary to medical indications also to achieve a feeling of being "sharper" in daily life, e.g. by reducing tensions in working life.

*Cocaine* abuse is one of the most widely spread forms of drug abuse in the United States. Inhaling ("smoking") of cocaine base ("crack") with high levels of intoxication carries a high risk of confusion, aggressive explosions etc.

*Opiates* are likely to be synthetic (often called opioids). We can expect to see more fentanyl abuse with subsequent fatalities. Classical opiates such as dihydrocodeine have been reported as substitutes for heroin. The same goes for Subutex<sup>®</sup>, which has become a serious problem in e.g. Helsinki. Due to the rich supply in high quality heroin, it is not likely that "kompot" will re-occur to any large extent in the near future.

*Plant drugs*. A particular psychological problem surrounding plant drugs is that they are in many cases described as "natural"

and thus perceived as less dangerous than substances produced in laboratories. Globally, hundreds of plant drugs are known as intoxicants, both for social and religious use.

Ibogaine is a hallucinogen, which is produced from the root bark of *Tabernanthe iboga*, which grows in e.g. Gabon. The substance is stimulating, but it also affects body perceptions and at higher doses causes hallucinations. In recent years it has been used in medical experiments, and it has been shown to reduce or even extinguish dependence upon e.g. opiates or amphetamine and alleviate opiate abstinence. Several successful case reports point in that direction. It should be observed that ibogaine might be used for self-medication, especially among old opiate abusers.

Ipomoea (*Rivea corymbosa*) has for long periods been sold in Swedish seed stores. The seeds contain a hallucinogen which is closely related to LSD. They are crushed and the hallucinogenic component leached in water, and the solution is swallowed. The drug was abused in Sweden in the 1960s and has been periodically abused since the 1990s.

Mescaline (from peyotl cactus) is sold on the internet as a component in dried pieces of cactus. The preparation can be interesting as a hallucinogen in the same way as e.g. mushrooms containing psilocybin.

Ergot is a parasitic fungus (*Claviceps purpurea*) on grains. It has granulae about one centimetre long. It contains a hallucinogen (lysergic acid). Long ago, the substance was commonly abused as an intoxicant, with serious results, as it reduces blood flow and causes gangrene and miscarriages.

Kratom (*Mitragyna speciosa*) is grown in e.g. Thailand, where it is subjected to formal drug control. The leaves are used for preparing tea. The preparation has complex effects: at lower doses (up to 14 grams) it is stimulating and at higher doses (from 28 grams) it has opiate-like effects. It is being sold on the internet. Its main intoxicant, mitragynine, was scheduled in September 2011.

In addition to currently scheduled drugs and drugs, which are likely to become scheduled in the near future, we ought to pay attention to new doping agents and new volatile solvents. *Doping agents*. A number of substances have doping-like effects without being formally scheduled. In recent years, abuse of such substances with a psychological purpose, i.e. to become tougher and more aggressive in confrontations, seems to have become more frequent than abuse to increase muscular growth.

*Volatile solvents* (inhalants) encompass also anaesthetic gases, such as laughing gas ( $N_20$ ), and cigarette lighter gas. Laughing gas has been sold at rave parties from steel tubes and filled into balloons and consumed on the spot. The administration is cumbersome and the intoxication lasts only minutes; thus it is not likely that this form of abuse will spread widely except at particular events. Cigarette lighter gas can cause serious toxic reactions and persistent nerve damages. Ether was sniffed as an intoxicant in the mid-1800s, by the European (esp. British) upper classes.

It is possible to keep writing watch lists such as the ones above to cover possible future drugs in the domestic and international markets. In the end, one will still be surprised by the abilities of drug abusers and drug chemists to find and develop new intoxicants and new combinations, which oneself has not been able to imagine on the basis of established knowledge.

#### Coda: Drug measurements in waste water new intelligence method

Modern chemical analysis methods enable the measurements of residues (metabolites) of narcotic drugs and other drugs in waste water. Earlier investigations have discovered traces of cocaine in toilets in the European Parliament and in the river Po in Northern Italy, where the real, consumed amount turned out to be several times larger than the amount reported through questionnaires etc.

Recently, an American study from ten cities has shown that a refined method offers possibilities of making quantitative calculations, which produce reliable estimates of the drug consumption in an area. Primarily, the search is focusing on methamphetamine, cocaine and cannabis metabolites, methadone etc.

The study was done at the Oregon State University and was based on a development of the process of chemical analysis to make it more effective. Today, it is possible to follow the concentrations of drug residues in real time and thus obtain current images of the ongoing abuse of the most important drugs.

In other studies, it has been shown that metabolites from medicinal drugs recalculate into the drinking water. In Southern California, residues from anxiolytics were found in the water supply to more than 18 million inhabitants. These drugs pass through the waste water treatment plants without being affected.

The development of chemical analyses in waste water makes the authorities less dependent upon questionnaires, hospital records, and police statistics, when estimating the real extent of drug abuse.

Systematic measurements of drug residues in water can be important for epidemiological and police intelligence by providing information about which drugs are being more frequently abused in a certain area and thus may require more attention. In the future, this can become a new intelligence method for daily information about the current drug abuse situation. (Gaidos, 2007).

In March 2010, an investigative feature programme ("Kalla fakta") of the Swedish TV4 Broadcasting Company published a report based on chemical analyses of waste water in Stockholm, estimating that about one inhabitant in a thousand had been consuming cocaine on a weekend night in January 2010. In January 2012, the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) launched a project to monitor traces of drugs in waste water from at least 15 cities within the European Union to collect comparable data on the consumption of illicit drugs.

This overview was initiated as a presentation at an expert meeting 24 May 2006 organized by the Swedish Carnegie Institute and the Youth Section of the Drug Squad of the Stockholm County Police Department. A revised version was printed in Swedish in the Publikation för Svenska Narkotikapolisföreningen ("Journal of the Swedish Narcotic Officers' Association"; Nos. 2-2006 and 3-2006, with an additional note in No. 2-2008) and later reprinted in my book Ett nytt fokus på narkotikamissbruket ("A New Focus on the Abuse of Drugs"; Swedish, 2008). It has been updated and edited for this republication.

## 2. Scheduling of narcotic drugs in Sweden

#### Historical background

Narcotic drugs (controlled substances, "narcotics"; Swedish: narkotika) have been under special control in Sweden since 1923, when the first Narcotics Ordinance (Swedish: Narkotikaförordning) was enacted. With the growing non-medical use of pharmaceutical drugs in the 1940s, special provisions were enacted for the control of synthetic CNS stimulants, such as amphetamine and phenmetrazine. They were brought under formal control as narcotics in 1959. For long periods, Sweden has been at the forefront in the scheduling of new substances, such as LSD (1966), kath (Catha edulis, 1989) and in recent years a number of synthetic cathinones (such as mephedrone, 2009, and butylone, 2010). The United Nations International Convention on Psychotropic Substances (1971) was adopted partially as a result of Swedish diplomatic efforts in the late 1960s to establish international control of amphetamines and related substances, which at that time had become widely abused in Sweden. In the preparatory work, Dr. Nils Bejerot played a central role by putting together a profound documentation of the dependence-producing and injurious effects of this class of drugs (see e.g. Bejerot, 1970, pp. 76 ff.).

In 1962 a new Swedish Narcotics Ordinance (SFS 1962:704) was enacted, having certain penal provisions on unlawful sale etc.

#### Narcotic Drugs (Punishments) Act

The Narcotic Drugs (Punishments) Act (sometimes also translated as The Narcotic Drugs Act; Swedish: Narkotikastrafflagen, SFS 1968:64) was enacted in 1968 to counter the growing threat from organized drug crime. The penal provisions for unlawful acts involving narcotic drugs were transferred to this act, and the maximum sentence was increased to 4 years imprisonment. It was changed in 1969 and 1972 to increase the maximum sentences (finally to 10 years imprisonment). The law was rewritten in 1981 – 1983 to cover a wider range of unlawful activities (e.g. knowingly transporting money from unlawful drug transactions). Most recently, it was amended in 1988 to criminalize unlawful use ("abuse") and also in 1993 to give police legal authority to perform drug tests as a way to gather evidence of unlawful use of narcotic drugs (the provisions do, however, require a certain level of suspicion to authorize such a body search).

The Narcotic Drugs (Punishments) Act is also the legal basis for scheduling of narcotic drugs in Sweden. Any other law related to narcotic drugs is subsidiary to it. The relevant section (8 §) has the following wording:

#### Section 8

As used in this Act, the term "narcotics" refers to any pharmaceutical substance or goods injurious to health having dependence-producing properties or euphorising effects or goods which easily could be transformed into goods with such properties or effects and which

1. on that basis are subject to control according to an international agreement to which Sweden is adhering, or 2. have been declared by the Government to be regarded as narcotics according to the law.

#### Other laws related to domestic control of narcotic drugs

The Narcotic Drugs Control Act (Swedish: Lag om kontroll av narkotika, SFS 1992:860) controls the legal trade and use of drugs, e.g. in the pharmaceutical industry and the medical services. It also controls drug precursors (Swedish: narkotikaprekursorer).

The Narcotic Drugs Control Ordinance (Swedish: Förordning om kontroll av narkotika, SFS 1994:1554) is the statutory instrument to supplement the Narcotic Drugs Control Act. Drugs scheduled by Government decision are listed in an (updated) attachment to this Ordinance.

The new Act on destruction of certain substances of abuse being

injurious to health (Swedish: Lagen om förstörande av vissa hälsofarliga missbrukssubstanser; SFS 2011:111, in force 1 April 2011) authorizes a public prosecutor to seize and order the destruction of certain substances. The substances covered by the Act are goods which (1) have been decided by the Government to be scheduled as narcotic drugs or as goods injurious to health or (2) through an international convention to which Sweden is adhering but where the scheduling has not entered force, or (3) substances which can be presumed to become scheduled as narcotic drugs or goods injurious to health. The drugs covered by the two first criteria can be inferred from the announcements in the Swedish Code of Statutes (Svensk Författningssamling, SFS) or the Statutes of the Medical Products Agency (Läkemedelsverkets föreskrifter, LVFS). The last group (3) can to some extent be inferred from a list published by the Swedish National Institute for Public Health (FHI) listing substances currently under investigation to be scheduled (see: http://www.fhi.se/Tillsyn/ Klassificering/Substanser-under-utredning-infor-framstallanom-klassificering-som-narkotika-eller-halsofarlig-vara/). The list is being continuously updated.

The purpose of the law is to empower the criminal justice system to stop new drugs from appearing on the market before their classification has entered legal force. There are no penal provisions in this law. This means that the person possessing the substance may risk losing their property but will not risk punishment.

In the first nine months after coming into force (April – December 2011), the law was invoked in some 200 cases by Customs alone. The total seizures of substances amounted to 40 kilograms. So far, seizures made under the provisions of the law have, however, not been challenged in court.

#### Schedules

The drugs scheduled by Government decision are listed as an attachment 1 to the Narcotic Drugs Control Ordinance. See this link <u>https://lagen.nu/1992:1554</u>. (The most recent issues of the attachments are listed at the bottom; Bilaga = attachment.) The spelling is Swedish (with some exceptions), but it conforms closely

to the International Scientific Vocabulary (ISV).

The Swedish Medical Products Agency (Swedish: Läkemedelsverket, LV) is statute-bound to publish in their LVFS series the schedules of all drugs under narcotics control (SFS 2011:134, 3 §). LV also publishes a (consolidated) listing of all narcotic drugs scheduled in Sweden:

http://www.lakemedelsverket.se/upload/lvfs/LVFS\_2011-10.pdf (manual search thread: www.lakemedelsverket.se > Lagar & Regler > Lakemedelsverkets föreskrifter – LVFS > Amnesvis forteckning > [Right hand column] > Narkotika > 2011:10.

Every narcotic drug is assigned to one of five schedules in the LVFS (I – V) according to their permitted use in medicine and their risk for dependence. Schedule I lists the drugs not normally permitted for medical use, such as cannabis, heroin, kath (*Catha edulis*) and LSD.

#### Channels for scheduling narcotic drugs

In Sweden there are three channels for scheduling a dependenceproducing substance as a "narcotic drug" within the meaning of the Narcotic Drugs (Punishments) Act:

1. A decision by the United Nations (or in some cases by the European Union) puts a substance under international control. Then, the Swedish Medical Products Agency (LV) directly adds it to its schedules (LVFS). This was the case in 2008 with oripavine, scheduled by the UN under the 1961 Single Convention on Narcotic Drugs.

2. A substance which has been used, is being used or has the potential to be used as a medicinal (pharmaceutical) preparation is evaluated by the LV, based on evidence of abuse and dependence liability. An initiative is presented to the Swedish Government (Regeringen), which will then come to a decision within a month or so. This has been the case with e.g. ketamine (2005) and recently with O-desmethyltramadol (2011). The substance is added to the (updated) attachment of the Narcotic Drugs Control Ordinance and published in the Swedish Code of Statutes (SFS) and the

LVFS. The decision must be communicated with the European Commission. There is no need to involve Parliament (Riksdagen) in the scheduling of a narcotic drug.

3. Substances which have no previous use in medicine are assessed by the Swedish National Institute of Public Health (Swedish: Statens folkhälsoinstitut, FHI). The procedure is then the same as for LV. FHI is, however, at the disadvantage of generally having less background information about abuse and dependence liabilities of the specific substances to be considered, as many of them have only been made available on the drug market and subject to abuse for a short time. Input to FHI comes from i.a. customs, police and hospital experience with new (unscheduled) substances.

#### Monitoring and intelligence systems

Several institutions monitor the Swedish and international drug markets for new substances or modes of abuse. This provides input for Government decisions to schedule new drugs as narcotics in Sweden.

*CAN* (Centralförbundet för Alkohol- och Narkotikaupplysning; Swedish Council for Information on Alcohol and Other Drugs) is a semiofficial body for drug education. It also operates a report system (CRD) for monitoring new drugs in Sweden. CAN surveys drug abuse in various populations and publishes an annual report on the domestic drug situation. It has one of the largest specialized drug libraries in Europe.

*FHI* (Statens folkhälsoinstitut; Swedish National Institute of Public Health) is entrusted with the task of monitoring and assessing new non-medical drugs and making formal proposals to the Government to have the substances scheduled as narcotic drugs.

*LV* (Läkemedelsverket; Swedish Medical Products Agency) monitors the medical sector to assess medicinal (pharmaceutical) drugs to be scheduled as narcotic drugs.

*NADIS* is a network for interagency information exchange on new drugs. It functions as a reference group to FHI and LV in the collecting of information to serve as a basis for initiatives to Government on scheduling. NADIS receives administrative support from FHI.

*RKP* (Rikskriminalpolisen; Swedish National Criminal Police) is a division of the Swedish National Police Board (Rikspolisstyrelsen, RPS). RKP coordinates intelligence gathering and crime investigation related to major crime and cross-border crime. It has a very active internet drugs intelligence group, which provides early warning about new drugs with abuse potential.

*SCI* (Svenska Carnegie Institutet; Swedish Carnegie Institute) is a private foundation devoted to research primarily on drugs and related problems. For decades it has been involved in the monitoring and assessing of new drugs in order to provide scientific background information primarily to prosecutors and courts in drug cases.

#### Current moves towards scheduling

A list of drugs classified as narcotic drugs after 1 January 2006 is enclosed as attachment.

A list of substances under consideration to possibly be scheduled as narcotic drugs or good injurious to health is published by FHI:

http://www.fhi.se/Tillsyn/Klassificering/Substanser-underutredning-infor-framstallan-om-klassificering-som-narkotika-ellerhalsofarlig-vara/

The headlines are to be read the following way: Trivialnamn = trivial or common name; Kemiskt namn = chemical name based on Swedish spelling of the International Scientific Vocabulary (ISV); Yttrande = administrative statement by the Swedish National Institute for Public Health (FHI) at the request of customs, police or prosecutors about the possibility of the drug becoming scheduled – this is important for administrative decisions to seize and forfeit new substances not yet scheduled; Framställan = formal communication to the Swedish Government to have the substance scheduled as a narcotic drug or a goods hazardous to health.

The list is expected to be frequently updated.

#### **No generic (analogue) or effect-based definitions to be expected** The rapid spread of new drugs in Sweden has caused experts and

media to discuss the introduction of generic (analogue) or effectbased definitions of narcotic drugs. If enacted, such a definition (or such an amendment of the current definition) would enable the courts to declare a new substance to be a narcotic drug within the meaning of the Narcotic Drugs (Punishments) Act, even if the drug has not been formally scheduled before the drug becomes the centre of attention in a court case.

The issue was briefly addressed by a Government Commission on drugs (SOU 2008:120). The Commission did, however, not put forward any proposal on the matter. Neither was the issue raised in the recent Government Bill to the Swedish Riksdag (prop. 2010/11:4). An effect-based definition is, nevertheless, used for the legal control of hormonal doping agents (Swedish: dopningsmedel). There, criteria based on pharmacological effects are used for assessing whether or not of a substance falls within the scope of the law. FHI has published a list of about 60 substances, which they consider to be doping agents within the meaning of the law, and it would be highly unlikely that a Swedish court would overrule that consideration. The FHI list can be found here:

http://www.fhi.se/Documents/Vart-uppdrag/dopning/forteckndopningsmedel-nr7-110707.pdf (updated July, 2011).

#### A note on terminology and translations

There are no official (i.e. Government-issued) translations into English of Swedish laws and statutes related to drug control. Some texts have been translated more than once, using different terminology. The differences are obvious in the translations on the Swedish concept "hälsofarliga varor". This occurs in the definition of narcotic drugs according to the Narcotic Drugs (Punishments) Act (SFS 1968:64), the Act on prohibition of certain goods injurious to health (SFS 1999:42), and the new Act on destruction of certain substances of abuse being injurious to health (SFS 2011:111). The concept can be translated as "goods injurious to health" or "goods hazardous to health".

#### Indexing of Swedish laws and statutes

SFS (Svensk Författningssamling) is the Swedish Code of Statutes issued by the national Government (Regeringen). LVFS (Läkemedelsverkets föreskrifter) is the Statutes of the [Swedish] Medical Products Agency (Läkemedelsverket). Swedish laws and statutes are indexed by the year of first issue and a running number of all laws and statutes issued that year by that source. The Swedish Narcotic Drugs (Punishments) Act was issued in 1968 as number 64 of that year, it is thus numbered SFS 1968:64.

#### Abbreviations

CAN	Centralförbundet för Alkohol- och Narkotikaupplysning	The Swedish Council for Information on Alcohol and
	ourrainounauppijoining	Other Drugs
FHI	Statens folkhälsoinstitut	National Institute for Public
		Health
LV	Läkemedelsverket	Medical Products Agency
LVFS	Läkemedelsverkets föreskrifter	Statutes from the Medical
		Products Agency
RKP	Rikskriminalpolisen	Swedish National Criminal
		Police
RPS	Rikspolisstyrelsen	Swedish National Police
		Board
SCI	Svenska Carnegie Institutet	Swedish Carnegie Institute
SFS	Svensk Författningssamling	Swedish Code of Statutes
SOU	Statens offentliga utredningar	Swedish Government Com-
		mission Report Series

#### Web services

- CAN: <u>www.can.se</u> (mainly Swedish; some information in English; excellent library services).
- FHI: <u>www.fhi.se</u> (mainly Swedish; very short summaries in English on narcotic drugs).
- Lagen nu: <u>www.lagen.nu</u> (semiofficial and well administered database of laws and statutes; Swedish only).
- LV: <u>www.lakemedelsverket.se</u> or <u>www.mpa.se</u> (mainly Swedish; very short outline in English on narcotic drugs).
- RPS: <u>www.polisen.se</u> (mainly Swedish; some information in English).

#### Attachments

1. Drugs scheduled as narcotics in Sweden from 1 January 2006.

2. Drugs currently in the process of formal scheduling as narcotics in Sweden.

#### Attachment 1: Drugs scheduled as narcotics in Sweden from 1 January 2006

Substance	Date of legal force	Statute
bromo-dragonfly (BDF)	2008-01-01	SFS 2007:878
bufedron	2011-09-01	SFS 2011:958
butylone	2010-02-01	SFS 2009:1581
CP 47,497-C6 ("Spice") CP 47,497-C7 ("Spice") CP 47,497-C8 ("Spice") CP 47,497-C9 ("Spice")	2009-09-15	SFS 2009:917
desoxypipradol (desoxypipradrol, 2-DPMP, 2-benzhydrylpiperidine)	2011-09-01	SFS 2011:958
dextromethorphan (DXM)	2008-09-01	SFS 2008:728
DOC	2007-05-15	SFS 2007:157
DOI	2007-05-15	SFS 2007:157
flephedrone	2010-10-01	SFS 2010:1085
1-(2-fluorphenyl)-2-(methylamino) propan-1-one ("flephedron variety")	2010-10-01	SFS 2010:1085
1-(3-fluorphenyl)-2-(methylamino) propan-1-one ("flephedron variety")	2010-10-01	SFS 2010:1085
4-fluoramphetamine	2009-06-08	SFS 2009:379
HU-210 (Spice")	2009-09-15	SFS 2009: 917
JWH-018 ("Spice") JWH-073 ("Spice")	2009-09-15	SFS 2009: 917
JWH-081 ("Spice") JWH-200 ("Spice") JWH-250 ("Spice") JWH-398 ("Spice")	2010-09-21	SFS 2010:1083

Substance	Date of legal for	Date of legal force Statute	
JWH-122 ("Spice") JWH-203 ("Spice") JWH-210 ("Spice")	2011-09-01	SFS 2011:958	
MDPV	2010-02-01	SFS 2009:1581	
4-MEC	2011-09-01	SFS 2011:958	
mephedrone	2009-05-25	SFS 2009:316	
methedron	2009-12-09	SFS 2009:1026	
methylone	2010-09-21	SFS 2010:1083	
mitragynine	2011-09-01	SFS 2011:958	
naphyrone	2010-10-01	SFS 2010:1085	
N-bensylpiperazine	2010-09-21	SFS 2010:1083	
N-ethylcathinone	2010-10-01	SFS 2010:1085	
O-desmethyltramadol	2011-05-05	SFS 2011:309	
oripavine	2008-02-03	LVFS 2007:14 (UN*)	
pFBT	2011-09-01	SFS 2011:958	
phenazepam	2008-09-15	SFS 2008:743	
tapentadol	2010-09-01	SFS 2010:1081	
tramadol	2007-12-01 2012-03-15	SFS 2007:747; SFS 2012:43	

\* UN Commission on Narcotic Drugs. "Decision 50/1: Inclusion of oripavine in Schedule I of the Single Convention on Narcotic Drugs of 1961 and that Convention as amended by the 1972 Protocol." Report on the fiftieth session. Document E/CN.7/2007/16, p 52. Geneva, United Nations Office on Drugs and Crime, 2007.

## Attachment 2: Drugs currently in the process of formal scheduling as narcotics in Sweden

Substance	Assigned or expected date for legal force	Statute	
AM-694	2012-05-01	SFS 2012:152	
AM-2201	2012-05-01	SFS 2012:152	
4-HO-MET	2012-05-01	SFS 2012:152	
Metoxetamine	2012-05-01	SFS 2012:152	
4-MeOH-DALT	2012-05-01	SFS 2012:152	
RCS-4 Ortoisomer	2012-05-01	SFS 2012:152	
Dihydrofuran- (2(3H)-one (GBL)	Summer 2012 (?)	To be announced	
1,4-Butanediol	Summer 2012 (?)	To be announced	

*Earlier versions of this section have previously been published as separate documents on the home page of the Swedish Carnegie Institute (October 2010, May 2011 (updated) and March 2012 (updated)).* 

*The text has been updated to consider the changes in schedules of narcotic drugs up to and including SFS 2012:152 and LVFS 2012:6.* 

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