

FACTS ABOUT DRUG ABUSE IN IRELAND



HEALTH
PROMOTION
UNIT

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Facts about Drug Abuse in Ireland



COMPILED BY

Dr Desmond Corrigan
School of Pharmacy, Trinity College Dublin

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PREFACE

This Third Edition is an extensive revision and updating of the two earlier versions. New material includes information on drugs such as Ice, Ecstasy and Buprenorphine [Temgesic®] which have attracted attention or which have been extensively abused in recent times. Coverage has been extended to topics such as the use of drugs in sport and in the workplace, issues which are of increasing concern both nationally and internationally.

The aim of each of the editions of this book has been to provide in a non-technical way, background information on legal, medical, social and historical facts about drugs used for non-medical purposes in Ireland. It is not intended to be a definitive study of problem drug-taking in Ireland. There are several reasons why this cannot be a definitive study. Firstly, much of the information is not available, particularly about illegal drug use, simply because by its illicit nature it is a hidden activity. Secondly, the drug scene is constantly changing, reflecting fashion and the availability of different drugs at any particular time, and these changes are often unpredictable. Thirdly, drug problems are believed to develop from a complex interplay of individual human beings, the drug or drugs they take and the social and political environment in which the drug-taking occurs and this publication largely concentrates on the ways in which the drugs themselves contribute to the development of drug problems.

As was the case with the earlier editions, I am indebted to many individuals and groups who generously shared information with me. These include organisations as diverse as the International Coffee Organisation, the Garda Drug Squad, the National Drug Treatment Centre Board (hereinafter referred to simply as the "Drug Clinic") and voluntary groups such as the Ana Liffey Project, Ballymun Youth Action Project and the Dublin Diocesan Drugs Awareness Programme. The help, information and advice of the staff of the Health Promotion Unit has been invaluable. I am especially grateful to my many colleagues involved in both the prevention and treatment of drug abuse, for their helpful discussions, comments, information and support. I am also happy to acknowledge my indebtedness to my scientific and medical colleagues from all over the world, the fruits of whose research work I have attempted to incorporate into this publication in as non-technical a fashion as possible.

The book has been written in such a way that it will continue to be of use to those such as teachers, health-care and welfare professionals, community and other voluntary groups who are working to prevent drug abuse and to help its unfortunate victims, as well as to journalists and members of the general public, who seek basic factual information about the effects on the human body of the various chemicals we call drugs.

DRUGS AND DRUG RELATED PROBLEMS

A drug can be defined as a chemical which causes changes in the way the human body functions, either mentally, physically or emotionally. Such a description includes many materials we normally think of as drugs, as well as things we might not usually consider to be drugs, such as coffee, tea, alcohol, solvents and tobacco.

Drugs may be obtained naturally from plants (e.g. opium, cannabis, coca) or they may be prepared from natural materials by semisynthesis (e.g. heroin which is easily made from the morphine extracted from opium) or they may be totally man-made (e.g. amphetamines and the tranquillisers). The most widely used drugs (both legal and illegal) are plant products or easily prepared from plants, many of which grow readily in different parts of the world. Many of these plants have long been used by humans and formed the basis of medicine for centuries. Today we still use medicinal or drug plants but in addition we have available an increasing list of very powerful drugs produced by pharmaceutical companies all over the world.

We use these drugs in different ways; in medicines for example, to relieve pain, to treat cancers, to alleviate heart disease or to cure infections. Some drugs are used to help us cope with the anxiety and stresses of life, while others are used for recreational purposes, to help us relax and enjoy ourselves. Drugs, when properly used, can be of enormous benefit in the treatment and

prevention of disease in both humans and animals. There is, however, a price to be paid for the benefits (which are often illusory) of the drugs we consume. This is because of one fundamental fact:- that there is no such thing as a safe drug; all drug-taking involves an element of risk, harm and disease. Unfortunately drugs are frequently abused, leading to a variety of medical, social and economic problems. **Drug abuse** can be defined in a number of ways but in this publication the term is taken to mean the use of any drug, legal or illegal, which damages some aspect of the user's life - whether it is their mental or physical health, their relationship with their family, friends or society in general or their vocational functioning as students or as workers both inside and outside the home. This definition includes not only the use of illegal drugs but also the dangerous use of legal drugs such as alcohol and tobacco, the harmful use of prescribed medicines exceeding the recommended prescribed dose and the illegal use of legal drugs, e.g. drinking and driving or smoking cigarettes in a no-smoking area. The fact that a drug is legal and socially acceptable does not mean that it causes less harm or damage than an illegal drug. Indeed, it appears that as the use of a particular drug becomes more acceptable, more of it is used by more people, more often, with greater adverse consequences for the user's health and wellbeing.

Most people who use drugs suffer no

permanent ill-effects from the drugs they take. Many benefit when they use medicinal drugs in the correct prescribed way. There are, however, very serious risks in taking drugs and a large part of this publication is about these and how they arise. Risks apply to all or most of the drugs described in this booklet, though each drug has its own particular set of risks.

Most of these drugs are mind or mood altering (psychoactive) drugs, but they affect not only the brain but also other parts of the body. Thus physical as well as mental effects have to be considered.

Drug Effects.

Statements about the effects of a particular drug are statements about what usually happens with most people when they take that particular drug. But the effect of any drug on the human body is difficult to predict because it depends on a number of different factors such as:-

- the type of drug class to which it belongs
- the dose or amount of drug taken
- the physical and mental condition of the drugtaker
- the environment in which the drug is being used
- the mechanisms controlling the entry and removal of the drug from the body
- the use of other drugs at the same time.

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Drug Types.

Some of the large number of psychoactive drugs calm the mind, others cause excitement, while others can offer complex mental experiences. It is, however, possible to classify or catalogue these different drugs into a small number of separate classes or types. While each individual drug will be different, its overall effects will be those of its class, producing these by attachment to the same type of "receptor sites" in the brain. They will produce much the same type of withdrawal symptoms and different drugs within the same group can be effectively substituted for one another and thus relieve the withdrawal symptoms which occur with the other drug.

Most drugs of abuse can be placed in one of five main categories although some, e.g. cannabis, tobacco and solvents, must be considered separately as they do not easily fit into the following classification:

Opiates - these are described as narcotic analgesics because they are strong pain killers (analgesics) and because they produce a feeling of euphoria and sleepiness (narcotic). Included are opium and its derivatives, morphine, codeine and heroin, as well as the synthetic opiates, methadone, buprenorphine and dipipanone.

Depressants - are also known as sedatives and include drugs such as alcohol and barbiturates, which have in common the

ability to decrease brain activity causing sleepiness and in some cases relief of anxiety.

Minor tranquillisers - such as diazepam and lorazepam, have much the same general effects as the depressants but it is now recognised that addiction to tranquillisers is totally different to that which occurs with other depressants.

Stimulants - are drugs which elevate mood, increase wakefulness and give an increased sense of mental and physical energy. Included in this group are cocaine, amphetamines and caffeine.

Hallucinogens - produce a spectrum of strange intense visions and voices (hallucinations). Drugs such as mescaline, LSD, psilocybe mushrooms usually do not give rise to dependence but because of their intense effects on mental functioning they can be extremely hazardous.

Cannabis - drugs such as marijuana or hashish can have actions which are both depressant and hallucinogenic.

Tobacco - contains the drug nicotine which can have both stimulant and sedative effects, depending on the user's personality and mood.

Volatile solvents - such as glue, aerosols and fuels, produce a mixture of sedative, anaesthetic and hallucinogenic effects.

Drug Doses

Many drugs are believed to work by fitting in to receptor sites within the cells of the body (somewhat akin to a key fitting into a lock). At this site a drug can either cause an effect or it can block an effect. The interaction between a drug and its site of action depends on how well it fits the shape of the receptor as well as by the amount of the drug taken. As this amount or dose is increased, new unwanted, often damaging effects begin to occur. Many of the problems caused by drugs are directly related to the effects of increased dosage. By taking too much of a drug you run the risk of a frightening experience (e.g. the panic/anxiety reaction to high strength cannabis) or more seriously you are at risk of a fatal overdose. For example, the use of cocaine by South American Indians in small amounts as a result of the chewing of coca leaves is generally believed not to be particularly harmful. However, the smoking of highly purified and concentrated cocaine in the form of "crack" can result in sudden death or the rapid development of a serious addiction problem. If you take a mind-altering drug frequently, in high doses, for a long time, it is likely to destroy your perception of reality so much that normal functioning and development is damaged. Finding and keeping a job may be difficult and normal desires for food, sex and warmth may be dulled. Reactions to pain, fatigue and discomfort may also become muted, leading to self-neglect and malnutrition

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which is often damaging to health. The importance of the dose of drug cannot be overemphasised in understanding some of the controversies associated with drug taking. Repeatedly there are reports of a new drug fad or craze which suggest that the drug causes little harm. It is only when the drug becomes more popular and it is used more often and at higher doses that the harmful effects begin to appear.

How are drugs used?

There are many different ways of taking drugs, including eating, drinking, chewing, smoking, inhaling, sniffing, as well as injecting into the skin (subcutaneous), muscles (intramuscular) or veins (intravenous). The speed, duration, intensity of action and also the safety of the drug is determined by the route of administration. This is because the amount of drug absorbed and distributed within the body depends on the way the drug is taken. This in turn affects the amount of drug arriving at the site of action. The intensity of the drug effect is also controlled by the rate at which the drug arrives at the site and also by the rate at which it leaves as a result of being broken down (metabolised) and eliminated (excreted) from the body.

The onset of drug action is rapid if the drug is administered by smoking, nasal inhalation or by intravenous injection and slower if it is by chewing, eating or subcutaneous injection. The type of drug also determines

the route of administration. For example, alcohol is taken by drinking and heroin usually by injection or smoking. Other drugs such as cocaine or cannabis can be taken by several routes. Injection of drugs is the most dangerous route of drug taking partly because of the risk of a fatal overdose associated with the higher concentrations of drug that can be achieved, particularly with intravenous injection. Also proper injections need technical skill and many self-injectors are at risk because their lack of hygiene and use of non-sterile injection technique results in the spread of diseases when more than one person shares the same needle and syringe. These diseases include Hepatitis B and the Acquired Immune Deficiency Syndrome (AIDS).

Different Reactions to Drugs.

Different individuals react to drugs in different ways because they differ in the effectiveness of the mechanisms which control the arrival and departure of the drug at the target site in the body. This effectiveness varies due to age, gender, body weight and nutritional status. Exposure to cigarette smoke and other environmental pollutants can also alter the body's responses to drugs as can interactions with other drugs and food.

In the young, absorption of drugs and their circulation in the bloodstream is less effective than in adults. Similarly, elderly people react to drugs in a different way to

younger people and usually require lower doses of drugs. Less heavy people tend to get greater effects and greater dangers from the same amount of drug than heavier people. Men and women also react differently to drugs, e.g. alcohol. This is because men are heavier on average than women and their higher muscle content is associated with a higher body water content. When alcohol is consumed by men there is therefore a dilution in blood alcohol concentration (BAC). Women however tend to have a higher BAC because they have a lower body water content resulting from their lower muscle content and higher ratio of fat. They also appear to differ in the speed with which they break down alcohol in the lining of the stomach. For these reasons the same dose of alcohol will produce a 25-30 percent higher BAC in an average woman than in a man so that, if a man drinks six units (3 pints) of alcohol and a woman four units, they will both have similar blood alcohol levels. Women therefore given similar levels of consumption get drunk faster and are more vulnerable to alcohol-related problems such as liver, brain, heart disease and alcohol dependence than men.

Malnourished drug users are likely to have abnormally high levels of drugs in their blood because of a reduced level of fat to store the drug. Drug abusers who neglect their diet are also more likely to suffer poisonous reactions to the drug. Those that are dependent on alcohol or heroin and

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whose compulsive drug-taking results in self-neglect, may be particularly at risk from drug overdoses. Conversely a high food intake, particularly of protein, can slow down the absorption of alcohol and result in lower BAC levels.

Interactions with other drugs.

Studies of drug abusers in Ireland show that many take a variety of different drugs in what is known as polydrug abuse. This polydrug abuse makes it difficult to assess the likely effects of a particular drug on an individual. This is because, if two drugs are taken together, it is possible that their combined effects could be:- the same as, smaller than, or greater than the sum of the effects of the individual drugs. The commonest drug taken in combination with others is alcohol and the risks of a fatal overdose are very high with drug/alcohol combinations, whether it is barbiturate/alcohol, tranquilliser/alcohol or other mixtures. Another common mixture is alcohol and cannabis and in this case the depressant sleep-inducing effects of alcohol are increased by cannabis and this interaction has implications for work and traffic safety.

Since drugs remain in the body for varying periods, often hours or days, the two substances don't even have to be taken at the same time. In general terms the effects of combinations of drugs of abuse are little understood and uninvestigated, therefore the

advice to any drug user must be to avoid mixing drugs.

Adulteration and Fake Drugs.

When people buy a legally prescribed drug or medicine, they are virtually guaranteed that the drug supplied is the right amount of the right drug, because of strictly enforced controls and scrutiny. On the other hand, anyone who buys a drug on the 'street' (the illegal black market) has no guarantee that what they are buying is what they think they are buying. They do not know how much or how little drug they are buying and the resulting risk of an overdose is great. The sale of fake, contaminated and misrepresented drugs is common. Some of the fakes are ingenious and comic, such as henna sold as cannabis resin or lentils sold as L.S.D. Others are a hoax, such as roasted banana skins ('mello yello'), while others are dangerous e.g. a sample of amphetamine ('speed') which turned out to be heroin. The misrepresentation of drugs means that many drug users are taking drugs which they would not normally take or wish to take. The most serious case of substitution we have had in Ireland is the case where strychnine was mistakenly used as cocaine, resulting in one death and seven cases of strychnine poisoning. Contamination of street drugs especially of heroin and cocaine is common. Other drugs as well as non-drug materials are all used to 'cut' or increase the bulk and thus the profitability of the merchandise. These

'cuts' or dilutents can cause damage when injected into veins, and in America it is believed that many heroin deaths were really due to a reaction to quinine used to dilute the heroin.

These factors add greatly to the unpredictability of the effects of, and damage from, the use of drugs without medical supervision. In general, therefore, it cannot be predicted that the effect of a drug on a given individual will match those described in a briefing such as this, especially if the person is particularly vulnerable due to existing mental or physical conditions.

A drug's actions depend on more than the drug.

A drug's actions on the brain are influenced not only by the nature of the drug, but also by the personal characteristics of the individual, by the immediate setting in which the drugtaking occurs, by the expectations of the user and by larger cultural influences surrounding the drugtaking. For example, a mild drug experience with hallucinogenic mushrooms for one user may turn out to be a nightmare for an individual who is mentally unstable and who may be pushed over the brink into mental illness.

The surroundings in which the drug is consumed also influences the effects. For example, a person using alcohol in a quiet

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relaxed atmosphere may become sleepy, whereas if they drink the same amount in a cheerful exuberant atmosphere they may feel stimulated and more extroverted. All of these factors contribute to the unpredictability of the effects of, and damage from, the use of drugs and can be a source of confusion about the actual risks associated with a particular drug.

The Hazards of Drug Abuse.

The hazards associated with drug abuse have traditionally been described in terms of the risk of a fatal overdose combined with the risk of addiction and these are very significant dangers with many drugs. In addition, attention is being increasingly paid to a range of other drug-related medical, social and financial problems.

Overdoses.

It is usual to assess the hazards of a given drug in terms of physical toxicity with the associated risks of fatal overdoses. Many drugs have a high overdose potential, e.g.

- Heroin and other opiates
- Cocaine
- Barbiturates
- Alcohol
- Solvents
- Alcohol/tranquilliser combinations.

However many other harmful drugs are not poisonous, e.g. L.S.D.

Dependence and Addiction

Another well-recognised hazard is the risk of "Addiction" or more properly dependence. The term "drug dependence" was introduced in 1964 by the World Health Organisation (WHO) in an attempt to break away from a narrow extreme view of addiction centred almost exclusively on morphine and where other forms of drug addiction were downgraded in importance. The 1964 approach proposed that each drug type should be seen as giving rise to its own particular type of dependence, e.g. dependence of the opiate-type and dependence of the cocaine-type etc.

The 1964 definition of drug dependence was as follows:

"A state, psychic and sometimes also physical resulting from the interaction between a living organism and a drug, characterised by behavioural and other responses that always include a compulsion to take the drug on a continuous or periodic basis in order to experience its psychic effects, and sometimes to avoid the discomfort of its absence. Tolerance may or may not be present."

Physical dependence may result from the body's adaptation to the repeated use of the drug and if the drug is abruptly stopped there is a rebound effect resulting in physical symptoms of illness ("Withdrawal"). Psychological factors play a very important

role in dependence through the reinforcing nature of many drugs, i.e. the reward in terms of pleasure, feeling of well-being, calmness etc, which may be obtained when the drug is taken.

Many drugs are known to result in compulsive addictive use after repeated and sometimes even occasional use, e.g.

Physical and Psychological Dependence

- Heroin and other opiates
- Alcohol
- Barbiturates
- Minor Tranquillisers

Psychological Dependence

- Nicotine
- Cocaine
- Amphetamine
- Cannabis

It is increasingly recognised that all embracing terms such as "Addiction" or "Dependence" are too broad to adequately describe the variety of compulsive drug using behaviours which are now recognised. Instead, attempts have been made to describe a series of "Drug Dependence Syndromes" which could include some or all of the following elements:

Tolerance.

As a result of repeated drug use, the human

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body adapts to the drug in different ways. It could eliminate the drug more quickly or the cells of the brain could adapt to the drug with the result that it is necessary to increase the amount of drug consumed to obtain the same level of drug effect. As a result of this tolerance to the drug, a heroin addict can take up to 100mg or more in one injection which is 10 times the normal medical dose and is a dose which would probably kill an ordinary person.

Withdrawal Symptoms.

These are the body's reaction to the sudden absence of a drug to which it has adapted. Withdrawal symptoms tend to be the opposite of the effects of the drug itself, e.g. withdrawal of a depressant drug can cause excitement, whereas withdrawal from a stimulant may result in depression. Such effects vary from the alcohol "hangover" to the fatigue and depression associated with stimulants and the chills, pains and influenza-like symptoms of heroin withdrawal. With some drugs, e.g. barbiturates, there is the risk of convulsions and even sudden death during withdrawal.

Withdrawal Relief

There are only two ways of abolishing withdrawal symptoms, one is time, as the body returns to normal functioning without the drug and the other is to take another dose of the drug or a substitute for it such as Methadone in the case of heroin. Common

examples of the latter approach include the use of alcohol in the form of the so-called "hair of the dog" to cure a hangover or the smoking of an early morning cigarette to abolish the irritability and mild agitation associated with nicotine withdrawal. In the case of opiates, the use of the next "fix" of heroin to abolish withdrawal is a key reinforcing element in the addiction process.

Subjective Awareness Of Compulsion To Continue Use.

This is where an individual becomes aware that he or she is using a drug continually either because of the need to avoid withdrawal or because of external cues such as television commercials and pictures of syringes or because of anger, frustration and anxiety.

Salience Of Drug Taking Relative To Other Activities.

This is where the compulsion to continue using the drug overcomes all other considerations, be they legal, family, health, moral or financial. One example would be a cigarette smoker who continues to smoke despite a heart attack or other serious health problems. In the case of a heroin addict this salience would manifest itself in a total preoccupation with drugs, where the whole day is spent looking for drugs to buy, selling drugs, and stealing from friends, family, employers, in order to get money for the next "fix".

Relapse.

The tendency for drug dependant persons who have abstained from drug use for a period of time to resume drug taking after treatment is extremely high. This is one of the reasons why treatment of addiction is so difficult. Increasingly it is being recognised that drug dependent persons will require treatment and rehabilitation on several occasions during their drug-using careers.

Dependence is more likely when a drug is injected than when taken in other ways. This is partly due to the fact that high doses are common, partly due to the 'rush' with its immediate satisfaction, and partly connected with the meaning of the injection ritual to the user. For some, the injection routine may become as important as the effect of the drug, and if no drugs are available almost anything will be injected. Nevertheless, dependence can occur with any method of drug-taking. Dependence does not always occur or may take some time to develop.

Drug-related Problems.

Drug dependence and drug abuse are not synonymous. Drug dependence is only one feature of drug abuse, but there are other aspects which are important in their own right. Drug problems can occur in the

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absence of dependence. A dangerous drug such as LSD can cause serious problems and yet has no dependence potential. It is also possible for individuals to suffer harm even though they are not dependent on the drug. On the other hand, some individuals may be dependent on drugs but because of the circumstances of the drug use may not necessarily come to serious harm, e.g. a doctor or nurse using sterile high quality narcotics. In assessing the damage that drugs cause it is essential to look beyond dependence per se and carefully analyse how individuals are actually harmed by their drug use. An overemphasis on dependence, which is difficult to treat, may result in the neglect of more effective ways of preventing and treating much of the problems caused by drugs. Therefore a broad view of problem drugtaking must take into consideration, not only the harm from dependence and overdoses but also the following aspects:

Drugs and Crime.

There is a general perception that drug use is associated with crime. There is no clear-cut explanation for this because on the one hand it is generally recognised that no drug has inherent crime-causing properties, yet on the other it is beyond dispute that many opiate dependants are heavily involved in crime. One survey which compared heroin users with non-users in Dublin reported that users were about three times more likely than non-users to have been arrested for

robbery and/or assault. In another Irish study approximately 60% of the heroin users had been arrested for robbery although the majority of those arrested reported that their first arrest occurred before they began to use drugs.

It is highly probable that it is the high cost of a drug like heroin on the black-market which influences the amount of crime against property commonly associated with heroin users. In Ireland, for example, it has been estimated that a heroin user with an established dependence could be using up to £150 worth of drugs every day. It is not surprising therefore that many such dependants are forced into a life of crime involving male or female prostitution, burglary, petty theft, shoplifting and particularly drug "pushing" in order to pay for their drugs.

In general, heroin users tend not to commit violent crimes, partly because of the sedative effect of the drug. In some cases dependants in withdrawal may use violence or the threat of violence in the course of a robbery in their desperation for drugs and/or money. There are other drugs whose effect on mental functioning may lead to violent crime against individuals. Angel Dust or PCP is a drug which can cause frightening violent homicidal attacks. The paranoia associated with amphetamine and cocaine use could also result in physical violence.

However the drug which is most often

implicated in violent crimes is alcohol. In other countries it has been estimated that alcohol may be involved in up to 30-50% of burglaries ; up to 70% of violent incidents ; up to 50% of murders ; up to 27% of road traffic deaths and may have a role to play in many cases of football hooliganism.

Drug-related Diseases.

Illness and diseases due to drug-taking can be due to the direct poisonous effects of the drug on various parts of the body (substance-specific harm) or it can be due to the way the drug is taken (technique-specific harm).

Substance-specific Harm.

Examples here are brain and liver damage caused by alcohol, as well as lung and cardiovascular disease caused by tobacco smoke and also by cannabis. Depression and other nervous problems may occur leading to admission to psychiatric hospitals. Many drugs can initiate attacks of pre-existing mental illness, e.g. cannabis may trigger off attacks of schizophrenia although there is no strong scientific evidence that cannabis "causes" mental illness.

Technique-specific Harm.

In contrast to alcohol and tobacco, heroin has few physically damaging effects on the body apart from the obvious risk of an

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overdose. Chronic opiate use is likely to result in constipation and loss of libido (sexual drive) but it does not cause harm to the liver, heart or lungs. The major disease risk from heroin is from the infections associated with unhygienic practices when the drug is injected. The problems associated with the injection of heroin or of any other drug include:-

1. Bacterial endocarditis which is a potentially fatal infection of the valves of the heart resulting in damage to the valve and subsequent heart problems.

2. Septicaemia occurs as abscesses or generalised blood poisoning because of bacterial contamination of the needle and syringe by bacteria normally found on the skin or in the mouth or present in unsterile water used to make an injection.

3. Cases of gangrene have been reported when tablet forms of drugs, e.g. synthetic opiates are crushed, mixed with water and injected into the body. Ireland has the doubtful distinction of being the first country to report abuse of a product called Diconal® which is a tablet containing a mixture of the synthetic opiate, Dipipanone, and an anti-emetic (anti-vomiting) drug Cyclizine. During this epidemic a number of young Irish addicts lost fingers, hands and legs through amputation when gangrene developed. This occurred because of the presence of various additives in the tablet as well as the two drugs. These additives

clogged veins leading to gangrene.

4. Blindness due to fungal (mould) disease has been reported from countries such as France and Australia. The problem arose from the availability of a smoking grade of heroin (probably Chinese no. 3) which would not dissolve in water. In order to inject it, addicts used a variety of acid solutions such as vinegar, citric acid, car battery acid or lemon juice. The blindness occurred because some addicts used fresh lemons which were contaminated with mould. This was injected into the body and caused blindness.

Hepatitis B and Drug Abusers.

Hepatitis B is an acute illness caused by a virus and resulting in an inflammation of the liver. The virus is spread via blood, saliva, body excretions, by sexual contact and through shared needles and syringes. Prior to 1980 there were very few cases but the numbers began to rise rapidly in late 1980 as the number of heroin users in Dublin increased. According to figures compiled by Dr. Alan Shattock of the Department of Medical Microbiology, U.C.D., the overall incidence of hepatitis B in Ireland has quadrupled since 1980 compared to the ten years before 1980. This is largely due to a 15-fold increase in infections in intravenous drug abusers. Prior to 1980 only 20% of positive individuals were drug abusers, whereas since 1980 72% of positives were associated with drug abuse. There has

been a reduction since 1983 in the number of cases detected among drug users, but the incidence in non-abusers has risen, an increase related to the subsequent spread of the disease to sexual partners and medical staff in contact with the drug abuser, indicating the need for precautions when dealing with such patients as the disease is very contagious. The increase in the number of positive patients may lead to an increase in the level of chronic liver disease, cirrhosis and liver cancer. It has also been reported that 36% of I.V. abusers with hepatitis infections were also infected with the hepatitis D virus (HDV). Such patients are likely to suffer from more severe forms of the disease and are more likely to need hospitalisation because the risk of death from the acute form of the disease is increased by HDV as is the risk of chronic active hepatitis and cirrhosis.

HIV, AIDS and Drug Abuse.

The sharing of needles and syringes also increases the risk of HIV (Human Immunodeficiency Virus) infection and the subsequent development of AIDS (Acquired Immune Deficiency Syndrome). HIV attacks the body's immune system and by damaging or destroying the body's ability to fight infections and disease, makes an individual vulnerable to various infections and forms of cancer which are invariably fatal. HIV infection can be spread by:

- (i) sharing injection needles with an

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- (ii) infected person or through heterosexual or homosexual intercourse with an infected person or
- (iii) from an infected mother to her baby or
- (iv) through the use of blood and blood products from an infected person

(N.B. There is no risk of infection through this route in Ireland).

Intravenous drug abuse is a particularly high risk activity because the virus can be transmitted through infected needles, syringes, bowls or containers used to dissolve drugs and other injection paraphernalia which are often shared by other drug users. In September 1993, 159 of the 362 cases of AIDS reported in Ireland were in intravenous drug abusers. 52% of HIV positive individuals are intravenous drug users and are at risk of developing AIDS and in one study 63% continued to share injecting equipment, after they had been diagnosed as being HIV positive. The percentage of HIV Positive individuals who are injecting drug users is decreasing. The infections associated with AIDS usually result in death as there is no cure available. However, HIV is not as infectious as many other viruses, e.g. hepatitis, as normal social contact with a person carrying the virus or suffering from AIDS does not lead to infection.

[Further information on AIDS and HIV

infection can be found in "AIDS - The Facts" obtainable from the Health Promotion Unit.]

Drugs and Pregnancy

Increasing numbers of girls and women are becoming heavy users of all types of drugs. The disinhibiting effects of drugs such as alcohol and cannabis may lead to unwanted pregnancies. Sometimes drug use is continued during pregnancy. The developing foetus will be exposed to significant quantities of drugs and because its ability to eliminate drugs such as heroin, alcohol, cannabis etc. is incompletely developed, such exposure could be more prolonged than in an adult. In rare and extreme cases, the drug may interfere with the rapid changes taking place in the foetus leading to malformations. This risk is often greatest in the first three months of pregnancy. Abnormalities of the heart, kidneys and bowel are increasing in frequency in babies born to mothers who are users of cocaine during pregnancy. The drug can also affect the unborn baby in exactly the same way as it affects the mother, but the immature body is less well able to cope. Alcohol, sedatives, tranquillisers etc., which depress an adult's ability to breathe, will also depress this function in the foetus and also in the newborn baby.

In a minority of cases, the baby may become dependent on a drug such as heroin while in the womb, if the mother is taking

the drug continually during pregnancy. The baby will need medical care immediately after being born to avoid withdrawal symptoms. This is a serious problem in Dublin, where, prior to 1980, only one or two pregnant girls sought treatment for addiction during pregnancy. By 1984, however, this had risen to 54. A study of 45 such mothers revealed that 105 children have been born to the members of the group.

Risks in pregnancy are not the same for all drugs. They are most established for drugs with depressant effects. In general, heavy drug use during pregnancy is associated with an increased risk of losing the baby at birth. This may be due to the direct effect of the drug, or it may be because of an effect on the health of the mother either directly, or through self-neglect and poor nutrition. Apart from anything else, heavy drug users are less likely to attend ante-natal clinics early in their pregnancy. The evidence for the effects of moderate use of many drugs during pregnancy is inconclusive; the best advice must be not to take any drug, including alcohol and tobacco and perhaps coffee during pregnancy without consulting a general practitioner.

Behaviour Changes.

For some drugs the effect on behaviour is often the most dangerous feature, e.g. the case of a 16 year old in London who consumed hallucinogenic mushrooms and

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was killed when he tried to walk between two underground train stations.

Many drugs change behaviour by releasing pre-existing aggressive tendencies, e.g. alcohol may reduce the normal inhibitions which control an individual's violent attitudes leading to the types of violence against the person outlined earlier. Behavioural effects are also a significant feature of solvent abuse where the intoxication caused by the fumes from aerosols, glues and butane gas can release anti-social violence and vandalism.

Other drugs alter our perception of the world around us and we do not react as usual to pain, hunger, fatigue etc. Drug abuse very frequently causes emotional and psychological problems. Memory may be poor, and the personality may change or deteriorate. The person becomes difficult to live with, irritable, changeable in mood, unreasonable or withdrawn from social contact.

Other hazards are due more to the sort of life heavy drug users lead. Their health is damaged by living rough, eating insufficient food and having no sense of purpose or belonging, outside of their drug-taking. Drug abusers are believed to have a mortality rate much higher than the general population. One British study stated that the death rate was 28 times normal, while another study of registered dependants in Britain reported that the mortality among

dependants was 16 times the expected number of deaths in a similar non-using population. The risk of death among dependants is probably due to the lifestyle of a young drug dependant, involving as it often does, crime, prostitution and drug pushing in order to maintain an expensive drug habit combined with malnutrition, self neglect, disease and overdosage, as well as the actual drug dependence itself.

Even with drugs, where the medical dangers from very occasional use of low strength products may appear slight, legal dangers remain. Being arrested, prosecuted and convicted can be enough to cause great distress to the drug user and his/her family, and may have lifelong consequences.

Family disruption.

It is not just the drug abuser who suffers harm. The strain and tension arising from the deceit, lies and manipulation associated with dependence often leads to the break-up of families and friendships. Income required for food, clothing and shelter, may be wasted on drugs and alcohol. Decreased productivity may further reduce family income. Other family obligations such as child care may be neglected and sexual problems between husband and wife may occur. Alcohol is known to be a major factor in over 30% of broken marriages in Britain and 52% of cases of wife battering (assaults) are said to be alcohol-related. Families of young people involved in

solvent abuse are particularly at risk. This is due to the difficulty of having to deal with an adolescent intoxicated with solvents, assaults on members of the family, legal difficulties resulting from the abuse and failure of the child to return home at night. Many parents are also frightened that their other children may imitate the abuser and start experimenting with solvents or other drugs.

Effects on Society in General.

The harm caused by drugs can also arise in other ways; because they are frequently involved in illegal activity, many drug addicts become isolated from ordinary life, only having contact with a small sub-group of drug-using friends. They thus find it harder to obtain or retain a job and to find a place to live. Increasingly they find themselves "marginalised", ostracised from society and form an alienated minority. As a result, a large amount of government funds must be spent on law enforcement and on medical care. The whole community pays a heavy price for drug-related crime through increased taxes and through increased insurance premiums. The community also loses out because of lost productivity due to absenteeism, unemployment and loss of earnings.

In some Latin American countries the huge profits amassed by drug producers and traffickers have had a destabilising effect on the local economy. As a result, some

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cocaine "barons" have more wealth than the State and have attempted to use this wealth and the arms it can buy, to blackmail and terrorise the organs of government into silence and tolerance of their illegal activities. The use of private armies developed from drug money has coined the term "Narcoterrorism" and a number of countries are now almost completely outside the control of their governments and in the grip of the powerful drug barons.

Wrong Time, Wrong Place.

Even in moderate amounts most of the drugs mentioned in this publication damage coordination, reaction time and the ability to maintain attention, effects which can last for hours. No matter how the person feels, they are not as capable as before and activities such as driving, operating machinery, even crossing the road become more dangerous, both to themselves and to others. While there is a general awareness of the link between alcohol consumption and road traffic accidents, there is less appreciation of the damaging effect of cannabis and tranquillisers on the skills required to drive safely. There is increasing evidence from other countries of the role of cannabis in particular, in traffic accidents, fatal train crashes and even airplane crashes. In some studies the percentage of those killed and injured in crashes, who had been using cannabis, is the same as the percentage who had been drinking alcohol.

The impairment caused by many drugs may last for hours after the sought after effects have worn off. For example, the effect of cannabis on driving ability persists for 3-4 hours after the "high" and it is claimed that even single doses of some minor tranquillisers taken the night before, can impair driving ability the following morning.

Drugs in the Workplace.

Drugs such as cannabis, alcohol and tranquillisers can also impair intellectual performance, memory and learning ability. Therefore individuals who abuse drugs frequently and/or during the day will be less effective at work. While the enormous human, medical, social and financial costs of drug abuse are largely paid for by the drug abuser and his or her family, there is increasing concern that the costs are also being paid for in terms of workplace performance and safety. The harm caused to an individual's ability to learn and remember vital skills damages their ability to gain employment and the ability to perform a job efficiently and with due regard to the safety of themselves, their fellow workers and the general public. Drug abuse in the workplace leads to problems such as increased absenteeism (drug abusers are missing from work up to 2.5 times more often than non-abusers), ill-health (drug abusers are believed to lose 10 times more sick days than non-users), work accidents (2-3 times higher in abusers), lower productivity (25-33% lower in drug users),

thefts of products, raw materials, tools or embezzlement by white collar "management", decreased quality of work and management/employee difficulties due to personality changes. As a result, drug abuse in the workplace results in large financial losses, such as the estimated £300 million in lost output in Ireland due to alcohol abuse, not to mention the huge loss of human potential.

Drugs and Sport.

The abuse of drugs not only permeates our leisure and working lives but has also affected sporting activities in recent years. The increasing competitiveness and professionalism of modern sport with its emphasis on huge financial incentives has led to an unwelcome and dangerous use of many different types of drugs to improve sporting performance. Most sports now prohibit the use of drugs which are likely to give one individual an unfair advantage over another. The Olympic Council of Ireland has published a list of drugs that are restricted. This list includes stimulants (amphetamine and ephedrine), narcotic analgesics (codeine, morphine), diuretics such as frusemide, which increase the flow of urine, certain growth hormones and anabolic steroids such as nandrolone, stanozolol and testosterone. These latter are used to increase body weight and muscle mass in athletes and body builders. They are potentially dangerous as they can cause jaundice and liver disease, high blood

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pressure due to fluid retention, suppressed sperm formation in men and masculinity in women. In addition, a number of those using anabolic steroids have reported psychotic and other psychiatric conditions. Because these steroids are given by injection there is increasing concern about the possible spread of H.I.V. infections if the same needle and syringe are used to dose a number of athletes. In other countries attempts are being made to ban the sale of steroids to those under 18 and to curb the advertising of steroids in athletics magazines. Many national and international sporting bodies have attempted to deter drug-taking by introducing random testing of individuals.

Further information on prohibited drugs in sport may be obtained from the Olympic Council of Ireland.

The Extent Of The Problem.

There is no satisfactory answer to a question such as "how many people use drugs in Ireland". Not surprisingly, facts and figures are more readily available about the use of drugs such as alcohol and tobacco which are legal. It is much more difficult to determine the number of Irish people using, abusing or dependent on the various illegal drugs (such as opiates, cocaine, cannabis etc.). This is in part due to the difficulty of measuring the extent of any illegal activity. Information on this sector of the drug scene depends on users of illegal drugs coming to the attention

of the legal system, health services or social workers. A variety of indirect and often imprecise indicators must be collated in order to develop an overall picture of the extent of the "drug problem". However, none of these indicators, either on their own or collectively can give an absolute measure of the extent of the problem, but merely give a relative measure of changing trends over a period of time. The indicators which are most often used include the results of surveys of self-reported drugtaking among selected groups (normally school children) of the population, law enforcement statistics relating to prosecutions and seizures of drugs, and health service data such as admissions to treatment, HIV and hepatitis cases, drug-related deaths etc. In addition, the extent of legal consumption of medicines, alcohol and tobacco is often indirectly relevant to the use of illegal drugs because the use of 'legal' and 'illegal' drugs is interconnected at several levels. At one level, it is often the case that widespread socially acceptable drug use encourages people to see drug-taking as an appropriate way of responding to personal or social difficulties or simply to alter mood. On another level, the same people who use illegal drugs may also use medicines or alcohol as part of their overall pattern of drug-taking, depending on what drugs are available on the black market at a given time. Also it is believed that early involvement by young people with legal drugs is a predictor of subsequent involvement with the illegal drugs.

A major difficulty with much of the available information is that it is retrospective and merely confirms what we know has happened months or even years ago. On the basis of the indicators at present available, imprecise though they are, it can be stated with certainty that there has been a rapid increase in illegal drug use in Ireland since 1979. The most marked and disturbing increase has involved the abuse of heroin and other opiate or synthetic opiate drugs. We have no way of knowing exactly how many people use heroin or are dependent on it. We know that over 7,000 persons have sought treatment for the first time from the Drug Treatment Centre since 1980. The vast majority of these were using heroin, morphine or synthetic opiates. We have no way of knowing what proportion of the total opiate-using population this number represents. The estimate of clients who attended drug treatment services in the greater Dublin area, including those who were in contact with more than one service during the early 1990's was 2,000 per year. We do know that at present opiate abuse is largely confined to the Dublin area.

Information from law enforcement statistics indicates that some illegal drug use occurs in all areas of the Republic with Cork and Limerick apparently having a higher level (apart from the greater Dublin area) than other parts of the country. Prosecutions and seizure statistics concur with surveys of self-reported drug use by young people which

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indicate that cannabis is the most widely used of the illegal drugs. Survey data suggests that solvent abuse ('glue sniffing') is more prevalent than earlier suspected but that the use of other drugs such as L.S.D., amphetamines and cocaine are currently at quite low levels. All the indicators (treatment, prosecutions, seizures and surveys) confirm this but it must be pointed out that the drug scene is constantly changing, reflecting both price and availability of drugs as well as fashion. Consequently the situation with regard to the use of a particular drug could change dramatically and rapidly.

The indicators confirm the impression that 1983 was a peak year in terms of arrests, seizures and admissions to treatment. The survey data however indicates that experimentation with drugs continues to increase with prosecutions (predominantly cannabis-related) showing a 70% increase over 1983 levels in recent years. The numbers seeking treatment in the same period has been similar to the 1983 levels. Allowing for under-reporting, which is inevitable with the survey approach, survey data shows that young Irish people use or experiment with illegal drugs less than their counterparts in France, the U.S., England and Scotland. The vast majority of them, however, do not use or experiment with illegal drugs.

Unfortunately the same cannot be said of the

legal drugs where there are grounds for concern about the numbers of young people using cigarettes and alcohol. In this of course they are merely following in the footsteps of their adult fellow countrymen and women who spent over £2,000 million on legal drugs (alcohol and tobacco) each year representing a staggering 19% of total consumer spending in Ireland. Many paid a high price for this drug consumption in terms of dependence, ill health and premature death. With approximately 95,000 alcohol dependants, 840,000 nicotine dependants and an estimated 22,000 at risk from tranquilliser dependence, it is difficult not to agree with the suggestion that most Irish people have more to fear from legal drugs and medicines than from illegal drugs.

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A number of statutes regulate the availability of drugs in Ireland. The 1961 *Poisons Act* controls the sale of poisons by confining their sale to authorised sellers (mainly pharmacists). Most recognised drugs of abuse are controlled in this way, but are also subject to further more stringent legal controls.

The 1947 *Health Act* permits the Minister for Health to make regulations to control the sale of medical preparations. Several such regulations exist. For example, the *Medical Preparations (Control of Sale) Regulations* restrict the sale of a wide range of drugs to pharmacists only. The regulations are comprised of five schedules. Drugs listed in either part of the first schedule may only be made available by retail sale on medical, dental or veterinary prescription. This schedule includes amphetamine-type stimulants and barbiturate sedatives, as well as various minor tranquillisers of the diazepam type, all of which are also subjected to other far more stringent controls. The second schedule lists substances such as oral contraceptives. The third schedule includes medicines which a pharmacist may not supply under the "emergency supply" regulations e.g. barbiturates which are controlled by the *Misuse of Drugs Acts*. The fourth schedule lists cautionary or warning notices which should appear on dispensed medicines. For example, various anti-histamine drugs are used to combat hay fever, prevent travel sickness and are included in some cough

bottles but they may cause drowsiness. Accordingly, the latter type of product must bear a warning that "this may cause drowsiness".

The *Medical Preparations (Control of Amphetamines) Regulations 1970* prohibit the manufacture, preparation, importation, sale or distribution of seven scheduled amphetamine ('speed') type drugs. The Minister for Health may grant licences for the manufacture, importation or sale of a specified quantity of a controlled preparation when it is needed for certain medical conditions.

Misuse of Drugs Acts 1977 & 1984.

The *Misuse of Drugs Acts* are intended to prevent the non-medical use of drugs. For this reason, they control not just medicinal drugs but also drugs with no current medical use. Offences involving the general public are covered under these Acts. The drugs to which the Acts apply are specified in the schedules to the Act and are known as controlled drugs. The list includes, in addition to narcotics such as heroin, other substances such as sedatives, stimulants and hallucinogenic drugs which are liable to abuse.

The Acts define a series of offences including unlawful supply, intent to supply, the import or export, and the unlawful production of controlled drugs. Other offences include the growing of opium

poppies, cannabis and coca plants, forging of prescriptions, occupiers of premises knowingly allowing illicit traffic in drugs or permitting the use of controlled drugs on their premises. The Acts also prohibit the unlawful possession of drugs, but make a distinction between possession for one's own personal use and possession for illegal supply to another person ('pushing'). This latter offence carries much heavier penalties. To enforce this law, the Gardai have special powers to stop, detain and search people and vehicles without a warrant if they have 'reasonable' cause to believe that someone is in possession of a controlled drug.

Customs and Excise officers have similar powers under the *Customs and Excise (Miscellaneous Provisions) (No. 2) Act 1988* which also permits intimate body searches by a medical practitioner acting at the request of a Customs officer, in order to detect smuggling of drugs in body cavities by so-called "Stuffers and Swallowers."

The *Misuse of Drugs Act 1984* prohibits the printing, or sale of books or magazines which encourage the use of drugs proscribed in the Act, or which contain advertisements for drug equipment, pipes or cocaine kits.

Penalties.

Maximum sentences differ according to the nature of the offence. Sentences are greater

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for pushing, illegal production or for allowing premises to be used for producing or supplying drugs, but are less for possession for one's own use.

For the more serious offences, maximum penalties include life imprisonment or an open-ended fine. In the case of cannabis, on the other hand, the maximum penalty for possession for personal use is restricted to a £300 fine for a first offence tried in the District Court, or £500 fine on indictment, £400 fine for a second offence with no option of imprisonment. If this second offence is tried before a judge and jury, the maximum fine is £1,000. For third and subsequent offences the fine is £1,000 or 12 months in jail or both. The penalty for a third offence tried by judge and jury is an open-ended fine or three years in jail, or both fine and imprisonment.

The penalties for possession of all other drugs depends on the type of court. In the District Court, the penalty is a maximum fine of £1,000 or 12 months in jail, or both. In the case of a person found guilty before a judge and jury, the maximum fine for possession is left to the discretion of the court, which may also impose a seven year jail sentence, or both the fine and a jail sentence.

Over 70% of drug convictions involve the possession of drugs while convictions for "pushing" or trafficking account for about 10% of cases before the courts.

Treatment of Convicted Drug Offenders.

When a person is convicted of an offence under these Acts the Court may decide to obtain a written medical report on the convicted person, with recommendations about medical treatment which the person might require arising from his or her dependency on drugs, and also a report on the person's social background, vocational and educational circumstances. On the basis of these reports the Court may decide not to impose the appropriate penalty. It can decide to have the person detained in a custodial treatment centre or require him or her to undergo a course of medical treatment and/or a course of education and training to improve his/her social and educational background with a view to facilitating social rehabilitation.

Regulations.

Regulations made under the Misuse of Drugs Acts divide the controlled drugs into five separate schedules to take account of medical practice. These schedules allow exceptions to the general prohibitions on possession, supply etc.

Schedule 1 lists mainly hallucinogenic drugs which have no medical use at present. It also includes some of the "designer drugs" (drugs made in backstreet laboratories in a hopeful attempt to exploit possible loopholes in drug laws). Drugs in this

schedule cannot be prescribed by doctors or sold in pharmacies. The use of these drugs is limited to scientific research or forensic analysis. Production, supply, import and possession are subject to special licensing.

Schedule 2 lists those drugs which may be used for medical purposes but which are regarded as particularly dangerous if abused. They consist mainly of the naturally occurring (e.g. morphine) and synthetic (e.g. pethidine) narcotics, but also include amphetamines and related stimulants. Any of these drugs can only be legally obtained if they have been prescribed by a doctor, dentist or veterinary surgeon and supplied by a pharmacist. All aspects of the production and supply of Schedule 2 drugs are strictly controlled and licensed and they are subject to stringent storage conditions in pharmacies and to strict record keeping requirements.

Schedule 3 to which less stringent controls and no record keeping requirements apply, contains certain dependence-producing sedatives such as barbiturates, some pain killers and some appetite suppressants.

Schedule 4 includes various minor tranquillisers and preparations of phenobarbitone containing less than 100 milligrammes. There are minimal Misuse of Drugs Act controls applied, since these medicines are already controlled under the Medical Preparations (Control of Sale) Regulations.

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Schedule 5 lists certain preparations of controlled drugs to which the restrictions on possession do not apply. These are usually very dilute non-injectable products some of which can be bought over-the-counter (O-T-C) without a prescription, but only from a pharmacy (e.g. some cough bottles and anti-diarrhoea products containing opiates).

Irresponsible Prescribing.

The Acts give the Minister for Health the power to give a direction prohibiting the prescribing of controlled drugs by a doctor, dentist or veterinary surgeon, who has been found, after investigation by a committee of inquiry, to have been prescribing, administering or supplying such drugs in an irresponsible manner. There is a special procedure which allows the Minister to give a temporary direction in a case of urgency. A prohibition on prescribing under such a direction lasts for four weeks but may be extended for periods of 28 days at a time while the case is being investigated by a committee of inquiry. The committee of inquiry having investigated the case can make a recommendation to the Minister for Health that a special (or permanent) direction be put in place. A doctor, dentist or veterinary surgeon against whom such a direction is made is given an opportunity to answer the case made against him/her and also has the right of appeal to the Courts. Since 1979 when the Misuse of Drugs Act became law, seven doctors have been served with such directions by the Minister for

Health.

Precursors of Illicit Drugs.

The processing of drugs from plants such as the Opium poppy and the Coca plant, as well as the synthesis of L.S.D., Ecstasy, Amphetamines and the so-called "designer drugs" requires the availability of various chemicals needed in different stages of their production. Article 12 of the 1988 United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances attempts to limit the supply of precursor and processing chemicals to illegal drugs producers. Within the E.U. a number of Council Regulations and a Directive [92/109/EEC] have been introduced to give force to the provisions of the U.N. Convention. In Ireland these E.U. provisions have been implemented by means of the European Communities (Monitoring of External Trade in Scheduled Substances) Regulations 1993. The controls included in the Regulations require producers, importers, distributors and users of 22 different chemicals to maintain records of stock. Government authorisation is required before some chemicals can be exported, while for others, such authorisation is only required if they are being exported to certain key countries in South America, e.g. Colombia, in the Middle East e.g. Lebanon, or in the Far East, e.g. Myanmar (Burma).

Advance notification of sales of chemicals such as Ergotamine used to produce L.S.D. or Safole used to produce Ecstasy, allows Governments an opportunity to delay consignments pending investigation or to veto deliveries altogether.

A person who commits an offence under these Regulations may be fined up to £1,000 or imprisoned for up to 1 year or may be fined and imprisoned. The Government has further strengthened the controls on these 22 precursor chemicals by designating them as controlled drugs under the Misuse of Drugs Act.

Road Traffic Act.

The Road Traffic (Amendment) Act 1978 makes it an offence to drive a car, motor bike, truck, pedal cycle or animal drawn vehicle while "under the influence of an intoxicant to such an extent as to be incapable of having control of the vehicle". Intoxicants include alcohol and drugs and any combination of drugs and alcohol. The word "drugs" here includes prescribed and over-the-counter (O-T-C) medicines.

Alcohol and Tobacco.

The supply, possession and consumption of alcohol and tobacco by adults is permitted, but at the same time availability is affected by taxation and various laws, some of which are designed to discourage young people from drinking and smoking. *The Intoxicating Liquor Act 1988* not only prohibits the sale of alcohol to those under 18, but also makes it an offence for a person under 18 to buy alcohol or to drink alcohol in public. *The Tobacco (Health Promotion and Protection) Act 1988* reinforces the prohibition on the sale of cigarettes to those

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under 16. This Act also bans the sale of smokeless tobacco products (e.g. Skoal Bandits ®) and enabled the Minister for Health to introduce regulations in 1990 prohibiting or restricting the use of tobacco in a large number of public areas including cinemas, theatres, trains, schools and public buildings.

Unrestricted Drugs.

There are some "drugs" which we often don't think of as drugs, whose availability is not subject to any legal controls on sale or consumption. Included in this group is caffeine contained in drinks such as tea, coffee and cola. The supply of organic solvents in the form of glues, aerosols etc. is prohibited under Section 74 of the *Child Care Act 1991*, where there is reasonable cause to believe the substance will be inhaled by a person under 18 for the purpose of causing intoxication. The actual possession and abuse of these products is not an offence, however a member of the Garda Siochana may seize a substance which is being inhaled by a person under 18. The penalty for supplying such products to those under 18 may include a fine of up to £1,000 or 12 months in jail.

Informal Controls.

It is sometimes said that the non-medical use of all drugs is subject to informal controls arising from custom and culture and from the requirements of everyday life. These controls are more likely to be effective with drugs which

are a familiar part of the culture. This may explain why coffee and tea are made available during the working day, while alcohol is generally reserved for after work. As against that, it has often been pointed out that the level of acceptance of excessive alcohol consumption is very high in Ireland. Strengthening of informal controls such as the increasing unacceptability of drunken driving or the hardening of attitudes to incompetence at work due to alcohol, may be as important as legal controls in preventing excessive, harmful or inappropriate use of drugs.

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Alcoholic drinks consist chiefly of water and ethanol (ethylalcohol) produced as the result of fermentation by yeasts of sugars from fruits, vegetables or grain. Beer contains about 5 parts ethanol to 100 parts of water, wine is about twice as strong, sherry is four times as strong, while distilled spirits such as whiskey, vodka or gin consist of almost half ethanol and the rest water.

Alcohol is almost certainly the oldest mood-altering drug used by man, and has been regarded as a food, a medicine and a drug. The use of beer, wine and mead (fermented honey) was well established before the process of distilling spirits was invented about 800 A.D. in Arabia.

Methanol (methylalcohol) is a different type of alcohol produced from wood and is used in methylated spirits and surgical spirit. A very small number of down and out alcohol dependents drink "meths", because it is cheap. Methanol is very poisonous and frequently causes blindness, coma and death. Ethanol, as in beer, wine & spirits, is unusual in that it has food value because it supplies calories. Ethanol provides 7 calories per gram, whereas carbohydrates and protein contain 4 calories per gram. Alcoholic drinks provide this energy but little other nourishment and for this reason are often referred to as providing "empty calories."

Legal Controls.

Because alcohol is a potent drug its use has always been regulated by society in different ways. Thus, licensing laws lay down when, where and to whom alcohol can be sold, but do not make the possession or drinking of alcohol by adults an offence. Other

legal controls on the use of alcohol relate to drunkenness, drunken driving, and age restrictions on the sale of alcoholic drinks to young people. The system of taxation via excise duty and VAT also has a role to play in influencing consumption of alcohol.

Alcohol may be sold in public houses, licensed by a District Justice, where the alcohol can be drunk on the premises, in restaurants, hotels and sports or social clubs and in off-licences, where the drink cannot be consumed on the premises. Licensing laws restrict the hours during which alcohol may be sold. Public houses may open from 10.30 a.m. to 11.30 p.m. during summertime while closing time is 11.00 p.m. in winter. Opening times on Sundays are from 12.30 p.m. to 2.00 p.m. and 4.00 p.m. to 11.00 p.m. In addition to the above hours, a "drinking up" period of half an hour (during which time alcohol may not be purchased) is permitted after official opening hours.

All public houses, of which there were an estimated 11,000 in 1992, must close on Christmas Day and Good Friday. Clubs, hotels and restaurants are permitted to serve drinks to members or guests until much later than public houses provided that a substantial meal is provided at the same time. An increasing number of licence "extensions" are given which allow late drinking during dances and festivals.

The 1988 *Intoxicating Liquor Act* brought in new restrictions concerning the presence of young people under 18 years on licensed premises and also the sale of alcohol to such young people in both on- and off-licensed premises. It is an offence to give alcohol to a child under five years old. Children under 15 years are allowed into a bar during permitted hours but

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only if they are accompanied by a parent or guardian. It is an offence to sell alcohol to a person under 18 either on or off the premises by either a licence holder or any other individual. The penalty for a first offence is a £300 fine, rising to £500 for subsequent offences and the licence may also be endorsed. It is an offence for a person under 18 to buy or attempt to buy alcohol or to represent themselves as being over 18 years in an attempt to buy or drink alcohol. The penalty is a £50 fine. For the first time it is now an offence for a person under 18 to consume or be in possession of alcohol in any public place (other than a private residence).

A Garda who suspects "with reasonable cause" an offence relating to alcohol and young people may request the name, address and age of the young person or any other person. Failure to comply or the giving of false details can result in arrest without warrant and a £50 fine. The Gardai also have the power to seize, detain and remove without warrant, any bottle or container suspected of containing alcohol which is in the possession of an under-18 who is in a public place. The 1988 Act also prohibits a licence holder from employing anybody under the age of 16 to sell alcohol. Relatives or apprentices over 16 may be employed but not other persons under 18. The Act also permits the Minister for Justice to make regulations concerning the issue of an "age card", specifying the age of the person, to those over 18 years old. It is an offence to forge or alter such an age card or to use such a forged card with intent to deceive. The penalty for such an offence could be a fine of up to £1000 or imprisonment for up to 12 months or both a fine and a jail term. Since the introduction of the new Act, there has been an increase in the number of

convictions for selling alcohol to young from 11 in 1987 to 55 in 1992.

It is an offence to drive under the influence of alcohol (and indeed drugs and combinations of drugs and alcohol). This prohibition applies to motor cars, trucks, motor bikes, push bikes and animal drawn vehicles. Since January 1994, it is also an offence to drive with more than 80 milligrammes (mgs) of alcohol per 100 millilitres (mls) of blood.

Home brewing of beer and the making of wine (but not the distillation of spirits such as poteen) is permitted, provided the beverages are not sold. Taxes on alcohol accounted for 9% of total tax revenue in 1992. The Government raised over £767 million from taxes (excise and VAT) on alcohol during 1992.

Prevalence and Availability.

The consumption of alcohol in Ireland increased at a greater rate than that of any other European country, with the exception of the Netherlands, in the ten years to 1980 but sales of alcoholic drinks have declined since then. However, despite the large percentage of our population under 18 years (32.48% in 1991) and the 25% of our population over 18 years who are non-drinkers (Eurobarometer Survey 1989), we still managed to consume 6.042 million standard litres of spirits and 1,847 million barrels of beer and 16,137 litres of wine in 1991. In 1992 personal expenditure on alcohol amounted to an estimated £1,844 million or £5.05 million per day. In addition business expenditure on alcohol amounted to £53,423 million in 1992.

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In Ireland approximately 1.9 million people (15 years and over) drink alcohol, and among EC countries, Ireland has the highest percentage (25%) of people aged 15 years and over who abstain from alcohol.

In real terms the price of a pint has decreased since 1950 and this, combined with its increased availability in off-licences and supermarkets, is behind the increase in alcohol consumption since that time.

Statistics for 1990 - based on per capita consumption - show that we were the 5th highest nation of beer drinkers in the EU, although our total consumption per capita of pure or "absolute" alcohol (combined consumption of spirits, beers, wines, etc.) at 7.2 litres puts us in a lower position. However, given the large number of total abstainers in the population these figures may not give an accurate picture of alcohol consumption in Ireland.

Alcohol-related offences remain high with 22,482 prosecutions for all types of offences involving alcohol in 1992. This figure includes 7,343 prosecutions relating to drunken driving (down from over 10,000 in 1983) as well as 6,030 prosecutions for drunkenness.

The advertising of alcoholic drinks is not as strictly controlled as the advertising of tobacco. "Voluntary" codes of practice are in operation. Spirits are not advertised on television, and advertisements must use models aged 25 and over, and cannot be associated with sport or sporting activities. Excessive use must not be encouraged, nor can the ads link drinking and driving, or drinking and sexual attractiveness.

Short-Term Effects.

Alcohol is absorbed very quickly from the stomach into the blood stream and starts to have effect within five to ten minutes. How much effect a drink has depends on the type of drink, on how quickly it is drunk, on when food was last eaten, on bodyweight or build and on the surroundings of the drinker. The type of drinker is also important, since tolerance develops and frequent heavy drinkers absorb alcohol more rapidly. A major factor is the amount of alcohol consumed, which is expressed nowadays in terms of "units" of pure alcohol. 1 unit (or 10 gms) of pure alcohol is found in half a pint of normal strength beer, or 1 glass of wine or one small measure of spirits. Some stronger beers, however, may contain up to 6% alcohol and a 500 ml can could easily contain 3 units of alcohol. A flagon of cider contains up to 10 units. The Royal College of Psychiatrists have published safe drinking guidelines for alcohol intake in terms of units per week. For men the upper recommended limit is 21 units per week while for women the limit is 14 units per week. Above these limits varying types of harm can be expected.

After the equivalent of about 2 units a person feels relaxed, less inhibited and more talkative. After 3 units co-ordination begins to diminish, as does judgment and decision-making skills. More drinks, and increasing blood alcohol concentrations, can result in staggering, double vision and obvious drunkenness, followed by unconsciousness. Just a few drinks impair concentration and co-ordination, with driving skills severely affected. A blood alcohol level of 80 mg/100 mls could be reached by most drinkers after only 4 units of alcohol. At that level studies show that there is a 10 fold risk of an accident

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and a 17 year old male with a blood alcohol level between 70 and 100 mgs/100 mls has 40 times more risk of an accident than a youth who has not been drinking.

Hazard of Excessive Use.

Alcohol is also implicated in many road accidents. The number of persons killed and injured between 9 p.m. and 3 a.m. provides a rough indicator of alcohol-related deaths. In 1992, 134 people were killed during these hours. When account is taken of the fact that only about 13% of road travel is undertaken during these hours and that 32% of road deaths and 21% of road injuries in 1992 occurred during these hours there is, as stated in the Environmental Research Unit's Road Accident Facts and Statistics (1989) "little room for doubt but that the combination of alcohol and driving in the darkness are significant contributory factors in road accidents". An accident involving a driver who fails the breath test has been shown to be three times more likely to be fatal than an accident involving a driver reported to be sober.

Effects of Heavy and Long-Term Use.

Prolonged heavy drinking over many years usually leads to the development of an alcohol dependence syndrome, involving a compulsion to continue drinking, tolerance to the effects of the drug and drinking to avoid withdrawal symptoms. It is not possible to estimate the total number of alcohol dependents in Ireland, but one source suggests that as many as 95,000 of the estimated 1.9 million drinkers will go

on to develop a problem with alcohol. Alcohol disorders account for 23% of all admissions to psychiatric hospitals, although it is recognised that as psychiatric hospital admission policies have changed, statistics relating to such admissions may not be a true indicator of the problem. In 1990, 6,377 people (of whom 2,146 were first admissions) were admitted to psychiatric hospitals with a diagnosis of alcohol abuse or alcohol psychosis. For men, alcohol disorders were the main cause of admissions, accounting for a third of all male admissions. The highest rate of admission is in the age group 35-44 years whereas a few years ago it was in the 45-55 age group. Experts in the field predict that in the coming years, the rate for those aged 25-34 will increase.

Heavy drinking affects the heart, causes gastric disorders and inflammation of the pancreas. Cancers of the upper airways and digestive tract (mouth, throat and oesophagus) are alcohol-related and there is an increasingly large amount of evidence linking alcohol and breast cancer in women. One sophisticated statistical analysis of the breast cancer studies concluded that women who drank 24g of alcohol (2-3 units) per day were between 1.4 and 1.7 times more likely to develop breast cancer compared to non-drinkers. However it is recognised that further studies are needed to confirm this link. Because it supplies calories, heavy drinking may cause obesity with its attendant dangers. This inadequate diet can result in protein and vitamin deficiencies, damaging to the nervous system, both in the limbs causing loss of power and sensation and in the brain causing impairment and poor concentration.

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Deaths from suicide, drug overdoses, accidents, and cirrhosis of the liver are common among alcohol dependents, as is permanent brain damage. Sudden withdrawal from alcohol after heavy use produces sweating, anxiety, trembling and hallucinations (the DTs).

Alcohol and Young People.

The number of teenagers treated for alcohol disorders in psychiatric hospitals has increased by 360 percent in the last 15 years and the average age of those admitted to hospital for alcohol disorders is falling rapidly, indicating that more and more young people are starting to drink at an earlier age and that they are drinking more. Studies conducted by Dr. P. Tubridy and Ms. B. O'Neill of the St. John of God Hospital in Stillorgan, Co. Dublin, found that 83% of the 1,000 14 to 17 year olds they surveyed had used alcohol. Another survey found that the average child who drinks is now starting at the age of twelve. Many drink to get drunk and a survey of schoolchildren in Dublin aged 13-17 years reported that 38% had been drunk at least once. A consumer spending survey showed that young Irish people spend almost a quarter of their spending money on alcohol.

Alcohol and Women.

Studies show that the majority of women will become more intoxicated than men on a given quantity of alcohol, either because they dilute the alcohol less than men, who have more muscle tissue and hence have a

higher body water content or because women have less of an enzyme or catalyst in the lining of the stomach, which can break down some of the alcohol before it is absorbed. It is believed that as more and more women drink and in amounts comparable to men, alcohol-related problems will develop at a faster rate than in men.

Alcohol in Pregnancy.

Alcohol from a woman's blood stream can pass through the placenta to reach her baby in the womb. The drinking of alcohol during pregnancy is associated with a spectrum of abnormalities ranging from minor retardation of growth to the fully developed Foetal Alcohol Syndrome (FAS). FAS is found in a proportion of babies born to alcohol dependant mothers. Studies in other countries indicate a level of 1-2 per thousand births. FAS involves three main features (a) reduced birth weight, (b) nervous system abnormalities which are seen as exaggerated tremors and irritability and borderline to retarded intelligence, (c) distorted facial features such as small head, small eye slits and a thin upper lip. Many factors as well as alcohol affect the likelihood of FAS including maternal age, socio economic status, nutritional status, as well as heavy smoking of tobacco and the use of cannabis. Even moderate drinking, i.e. 1-2 drinks per day, may increase the risk of miscarriages and stillbirths. Some long-term studies have established that pre-natal exposure to alcohol can result in a reduction in I.Q. at age four, and deficits in attention and reaction time at the age of seven. The minimum dose of alcohol necessary to produce dam-

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age and the most dangerous time in the pregnancy have not been established. Although it is suggested that it is safer for women not to drink during their pregnancy, a study in one Dublin maternity hospital revealed that of 100 women who had given birth, 58 were aware of the harmful effects of alcohol, compared to 93 who knew smoking was dangerous during pregnancy. The study found that only 11 stopped drinking when they became pregnant and a number did not reduce their consumption of alcohol at all.

Alcohol and Other Drugs.

If alcohol is taken at the same time as other depressant drugs, then the effects of both will be exaggerated, including the risk of overdose. The drugs involved include barbiturates and other sedatives, tranquillisers, cough and cold remedies, allergy medicines, solvents, narcotics and cannabis.

Further information on alcohol is available on request from the Health Promotion Unit.

SOLVENTS

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The abuse of volatile solvents by young children and teenagers is a recent worrying trend although the use of chemical vapours and fumes to obtain a drug experience is believed to go back to pre-historic times. Solvent abuse is the deliberate inhalation of gases, chemical fumes or vapours in order to get a 'high' or 'buzz' similar to the intoxication produced by alcohol. Solvents are chemicals which change from liquid form into gases or vapours at ordinary room temperatures. A variety of terms is used to describe the practice, e.g. "glue sniffing", "solvent abuse" or technically "volatile substance abuse" (VSA). The term, glue sniffing, has been widely used in the media but is inaccurate for two reasons; firstly a wide range of common household materials, apart from glue, give off gases or vapours which can produce drug effects and secondly, the material is actually deeply inhaled through the mouth rather than sniffed.

The range of products, all perfectly safe when used correctly, which can be abused is very large. The four main categories are: *adhesives and thinners* (glues, model cement, paint thinners, nail polish remover); *dry cleaning products* (dry-cleaning fluids, paint stripper, typewriter correcting fluid and thinners, fire extinguishers, printing industry solvents, shoe dyes and conditioners); *aerosols* (hair lacquer, room and body deodorant sprays, paints, painkilling and insect sprays, plaster removers); and *fuels* (petrol, lighter fuel, domestic and camping gas cylinders). Amyl and butyl nitrite are often sold as "poppers" in clubs, discos and "sex shops" to individuals who believe that inhaling them expands creativity, stimulates music appreciation, promotes a sense of abandon in dancing and intensifies sexual experiences. Amyl nitrite is used medically to treat

cyanide poisoning and because it dilates blood vessels it is used in angina attacks.

Abusers use a variety of techniques and devices to heighten the drug effect from these products by increasing the concentration of vapour and/or excluding air, for example by using a plastic bag over the head. Abusers can also inhale the product from a soaked rag, a coat sleeve or lapel, a handkerchief, cotton wool, pillow or from a bottle. For many products it is the vapour given off by the product which is used and the product itself, e.g. glue, is not ingested into the body. However, the reverse is often the case with gas fuels and aerosols which are sprayed or released from the container directly into the mouth and lungs.

Legal Status.

It is an offence for any person to sell, offer or make available any substance to persons under 18 which they know or have reasonable cause to believe is likely to be inhaled for the purposes of causing intoxication. Persons found guilty of this offence under Section 74 of the *Child Care Act 1991* are liable to a fine of up to £1000 or 12 months imprisonment or to both. This section of the Act also permits a Garda to seize any substance in the possession of a child in a public place and which the Garda has reasonable cause to believe is being abused by the child. Any product seized in this way may be destroyed on the instructions of a Garda Superintendent.

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Prevalence and Availability.

There are no statistics on the full extent of solvent abuse in this country. It is known to be primarily an adolescent phenomenon although it has also been reported in younger children and in adults. Surveys indicate that the highest levels of experimentation with solvents are in 15 and 16 year olds. Studies of large numbers of abusers show that children from every social class and family background can become involved. Earlier surveys of post primary students in Ireland suggested that girls under 16 living outside Dublin were the most likely to use solvents. A more recent study of secondary school students in Dublin showed that almost 13% reported experimentation and 5% reported regular use of a variety of these materials. These figures are lower than those reported from other countries.

Many abusable products are readily available in shops and at home. One study suggested that the average home could contain up to 30 individual abusable products. Many products are cheap to buy or easy to steal and if one product or brand is unavailable then another can be easily substituted. For many young teenagers, solvents are more easily available than alcohol. "Poppers" are believed to be widely available at a cost of £5 per bottle.

Short-term Effects.

Inhaled solvent vapours are absorbed through the lungs and rapidly reach the brain. The early effects are very similar to those of alcohol, involving stimulation of the nervous system followed by depression and if enough is taken, unconsciousness. The solvent 'sniffer' has many of the signs of

drunkenness - slurred speech, unsteady gait, lack of control. The most obvious difference between solvents and alcohol lies in the fact that the effects are felt very quickly and disappear within a few minutes to a half an hour when sniffing is stopped. The hangover from sniffing involves headaches and poor concentration, and has been described as being less severe than the alcohol hangover. Another major difference between alcohol and solvents is the occurrence of distorted vision and faulty judgement of space in sniffers. This frequently involves visual and auditory hallucinations, which may be pleasant, but which can also be very frightening. Judgement becomes impaired, leading to aggressive and uncharacteristic behaviour, particularly if alcohol is used at the same time. The fact that the effects are short-lived allows sniffers to conceal their activities even though the smell of solvent may last on the breath for up to a day.

Short-term Hazards

Many authorities in other countries feel that the anti-social problems (vandalism, aggression) related to solvent abuse seem to outweigh the risks to health. Some believe that solvent abuse is similar to alcohol abuse, but are concerned that children in the 6-14 age group can reach intoxicated states. They are most at risk when they are 'high', and it is inevitable that some will reach overdose levels and since many sniffers are quite young, they are unable to handle their 'drunkenness' and to handle the level of abuse.

Deaths from glue sniffing are rare in relation to the numbers thought to be sniffing, but the risk is always present. A major concern in relation to the sudden "sniffing" deaths which do occur is their

unpredictability - because death can occur even the first time solvents are used. It is technically difficult to determine the exact number of deaths due to solvent abuse which occur each year. It is known from a survey of newspaper reports that butane gas has been involved in most of the recorded deaths, followed by aerosols and typewriter correcting fluid. Glue has apparently been implicated in only one death in the past few years. The average age of those killed in 1988 was 15 although the ages of those killed have ranged from 10 to 26 years. Deaths in boys were double those in girls. Abuse of gas, aerosols and typewriter correcting fluid may cause heart failure if the abuser becomes stressed or engages in strenuous physical activity such as running away from an adult. The direct spraying of aerosols and butane gas resulting in the freezing of the larynx and airways seems to be a particularly dangerous practice. It would appear that glue is less hazardous, possibly because it is solid and is therefore not ingested directly the way that aerosols are.

Many deaths are accidental and are related to the drunkenness associated with the practice. Some abusers become unconscious and choke when they inhale vomit. Others have been suffocated when they placed a plastic bag over their heads and become either too drunk to remove it or else they become unconscious. In dangerous locations (e.g. high buildings, derelict sites, railway embankments, rivers or canal banks) accidents such as drownings, falls or burns (due to flammability of the solvent) may take place. Such accidents are most likely to happen if the abuser is alone, because no one is available to summon help in an emergency.

The side effects of the nitrite poppers include severe

headache, rapid heartbeat, low blood pressure, acute psychosis, coma and in rare cases sudden death.

Long-term Use.

Studies of industrial workers continuously exposed to low concentrations of solvents suggest that the liver, kidneys and brain can be damaged. However, the results of surveys of chronic solvent abusers are reassuring in that physical organ damage is not a significant or widespread problem for most long-term abusers. Although the medical evidence is inconclusive at present, it is known that some chronic abusers do suffer physical damage to their heart, brain, kidneys and liver. The extent and duration of abuse required to produce such harm is unknown.

Behavioural Problems.

A range of anti-social and behavioural problems can arise from solvent abuse. Solvents, like alcohol, depress the part of the brain which controls judgement and self-control. It is easy to understand therefore that any existing violent tendencies could be released under the influence of solvents in the same way that some adults can become aggressive and violent after a few drinks. Shoplifting, other thefts and burglary are used to obtain money to buy solvents or more frequently the products themselves are stolen.

Family disruption is a common problem - due to the difficulty of having to deal with a child intoxicated with solvents, assaults on members of the family, legal difficulties resulting from the above and failure of the child to return home at night. Many parents are also frightened that their other children may imitate the

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abuser and start experimenting.

Other behavioural effects from solvent abuse include absenteeism from school ("mitching"), followed by a deterioration in their school performance with many chronic abusers dropping out of school altogether.

When solvents are used regularly, sleep patterns are disturbed, there is loss of appetite and weight. "Glue sniffers rash" is frequently found as a result of repeated application of plastic bags to the nose. Long-term abusers may become depressed, moody and suspicious, forgetful and lose concentration, with a consequent deterioration in their ability to function normally in school, at home or in the community. These problems clear up in most children a short while after the sniffing stops. For most children it is a group activity and usually a passing fad. A very small minority of abusers go on to become solitary sniffers and they find it difficult to give up the habit, though whether this dependence is psychological or physical in origin is largely unknown. Most habitual users develop tolerance to solvents and must inhale larger quantities to get the "buzz". Withdrawal symptoms, which include sleep disturbance, nausea, stomach cramps, general irritability and facial tics, may take some weeks to occur. There is no firm evidence to suggest that solvent abuse leads directly to the abuse of illegal drugs such as cannabis or heroin. Solvent abusers are more likely to move on to abuse alcohol than illegal drugs.

CANNABIS

Cannabis is one of the oldest plants cultivated by man. Archaeological evidence from a Stone Age village, excavated on the island of Taiwan, suggests that mankind has been using the plant *Cannabis sativa* from earliest times.

The cannabis plant is a very adaptable annual, which can grow in most parts of the world including Ireland. In its chequered career, it has been grown for its long fibres known as hemp fibre, for its seed (hemp seed), used as a source of oil and for bird seed, and most notably for the intoxicating resin produced in its leaves, flowers and fruits. The drug form of cannabis has also been used for many centuries in many countries as a medicine. The characteristic chemicals called cannabinoids (of which there are at least 60 found in the plant) are currently being tested for use in modern medicine to treat glaucoma (a disease which causes gradual blindness), to prevent the nausea and vomiting caused by some anti-cancer drugs, and possibly to treat epilepsy.

The cannabis plant produces over 400 different chemicals, the most important of which are the main psychoactive compounds, the tetrahydrocannabinols (THC). However other cannabinoids may modify the effect of THC. Different cannabis products contain different amounts of THC. Herbal cannabis, known as marijuana, pot, grass or dope contains between 0 and 11% of THC, depending on the source. The resin, known as hashish or 'hash', contains between 1 and 26% of THC. The resin is squeezed or scraped from the flowering tops of the plant, and then compressed into blocks or slabs and allowed to solidify. This is the commonest form of cannabis used in Ireland. The strongest form of cannabis is an oil called 'hash oil' prepared by extracting or distilling

the cannabinoids from the plant. This form generally contains about 30% of THC but samples containing up to 60% of THC have been encountered. Abroad it has been noted that the marijuana now on the market is at 7% of THC, over 600 times more potent than in 1974 and at times may be even stronger than hash even though the herb form is usually considered to be the weakest form of the drug. Little is known about the THC content of the cannabis drugs available in Ireland. One sample of cannabis grown in Ireland was found to contain nearly 4% of THC, while other samples were nearly devoid of any active drug. In Ireland cannabis is usually smoked in home-made cigarettes called 'joints'. In the case of the resin and oil they are usually mixed with tobacco. Cannabis can also be smoked in pipes, made into a drink or put into cakes or biscuits. The variation in THC content described above makes it difficult to accurately predict the effects of a given sample of cannabis. Adding to this variability is the fact that the amount of cannabis used per dose also varies considerably. One study has shown the THC content of street 'joints' to vary from 0.15 mg up to 41 mg where 5 mg of THC per joint would be the minimum for a drug effect to occur.

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Legal Status.

All cannabis products are controlled by the *Misuse of Drugs Acts*. Cannabis is included in Schedule 1 which prohibits its medical and non-medical use. It is therefore illegal to grow, produce, supply or possess any of the drugs except in accordance with a licence from the Minister for Health for research or analysis. It is also an offence to allow premises to be used for cultivating, supplying or smoking cannabis. The penalties for possession of small amounts of cannabis herb and cannabis resin for personal use are, for a first offence, a fine of up to £300 imposed by the District Court or up to £500 in the Circuit Court. For a second offence, the District Court can impose a fine of up to £400, which rises to £1,000 if imposed by the Circuit Court. In the case of a third or subsequent offence, the District Court can impose a maximum fine of £1,000 or 12 months in jail or both. If the case is heard before a judge and jury, the maximum penalty can be an open-ended fine or 3 years imprisonment, or both fine and prison sentence. Cultivation, supply and possession of the isolated chemicals (cannabinoids) are treated more severely. (See section on *Drug Laws* for further details).

Prevalence and Availability.

Cannabis is apparently the most widely used of the illegal drugs but we have no idea of exactly how many Irish people have experimented with it, or use it regularly. There is little doubt that cannabis use has increased dramatically since 1968. A survey of university students in Cork in 1977 showed that 19% had experimented with the drug. The most recent indications are that 13% of Dublin post primary school children surveyed had used cannabis at least

once. The experimentation rate increased with age, with 2.3% of those under 13 reporting use of the drug compared to 24.6% in those 17 or over. Experimentation rates in rural school children are believed to be lower than those in Dublin. Large numbers of patients attending the Drug Clinic report cannabis use, and prosecutions for cannabis-related offences represent between 60 and 70% of all prosecutions under the *Misuse of Drugs Acts*.

Prices for different cannabis products range from £1 per gramme of homegrown herb, to £3 per gramme of imported herb. Cannabis resin such as Lebanese Gold, Pakistani Black or Moroccan Red can cost between £5 and £10 per gramme. The cannabis smuggled into Ireland comes from a variety of countries in North Africa, the Middle East, the Indian sub-continent and America.

Short-Term Effects.

The effects of cannabis depend on a number of factors, including the type of cannabis used (hash and hash oil have greater and longer lasting effects than the relatively weaker marijuana), the way it has been stored (cannabinoids are unstable in light and air), the amount used, the way it is taken, and the experience, mood and expectations of the user.

When smoked, cannabis exerts its effects very quickly. The effects last up to one hour with low doses, and for several hours with higher doses. When it is eaten or drunk, it takes one to two hours to have an effect. The dose is not easily controlled and unpleasant reactions are more likely and more severe. Inexperienced cannabis users usually require some training in order to recognise the effects of the drug.

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The sought-after effects, referred to as the 'high', include talkativeness, hilarity, euphoria, relaxation and a feeling of slowed time. Usual doses of cannabis also interfere with short-term memory and learning ability, with obvious implications for students and school-children trying to learn while 'high'. The more complex the task the more it is likely to be disrupted. Frequent heavy cannabis users are likely to have poor academic records, high levels of absenteeism from class and a high drop-out rate from the educational system. Moderate doses may also interfere with clarity of speech, resulting in communication of irrelevant words and ideas. Recent studies in adolescents show that impairment of recent memory in heavy cannabis users is still detectable after a 6 week drug-free interval. Adult cannabis users in the U.S. also report memory impairment and 45% of those surveyed stated that their ability to concentrate on complex tasks, to think clearly and to get things done was impaired. Motor co-ordination is also impaired at usual dose levels, affecting a person's ability to operate machinery, fly a plane or drive a car. This impairment lasts for some hours after the 'high'. Evidence continues to increase in other countries showing that cannabis contributes to the high level of fatal car, truck, airplane and train crashes among cannabis users. In many studies cannabis users report higher rates of traffic accidents than non-users and the percentage of those killed or injured in accidents who had been smoking cannabis is the same as for alcohol users. The very common combination of alcohol and cannabis produces greater damage than either drug alone, although little is known about the consequences of using cannabis and other drugs together.

An increasing number of cannabis users (especially

the inexperienced) using the stronger forms of the drug now available report adverse reactions to the drug. These unpleasant reactions include fearfulness, confusion, severe panic and anxiety, paranoid reactions and hallucinations. These reactions, although frequently very frightening, rarely require medical attention and usually respond to reassurance. There would appear to be no danger of an overdose and no deaths in humans have been reported.

Long-Term Effects.

Because widespread regular use of cannabis by such groups as children, adolescents, girls and women is a relatively new phenomenon, the consequences of long-term use, particularly of the highly potent drugs now available, are less conclusively documented than the short term effects. A large number of studies with animals have consistently demonstrated toxic effects at doses comparable to those taken by humans who smoke marijuana several times a day. Studies of human cannabis users have been contradictory in their results and in many cases the evidence is inconclusive. This is probably due to the fact that the correct types of long-term studies on humans have not yet been carried out.

When burned, cannabis cigarettes produce three times more carcinogenic 'tars' than tobacco and five times more poisonous carbon monoxide. Prolonged heavy use of the drug causes chronic bronchitis, cough, hoarseness, laryngitis and pre-cancerous changes in the lungs similar to those produced by tobacco smoke, except that the changes and lung damage occur more rapidly with cannabis smoke. Cannabis tar is directly carcinogenic in animals and earlier predictions that long-term cannabis use could

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lead to cases of cancer in humans are proving accurate in that cases of lung, head and neck cancer have been reported in young cannabis smokers. In addition, babies born to mothers who smoked cannabis were, according to one report, ten times more likely to develop acute nonlymphoblastic leukaemia than babies whose mothers did not smoke cannabis.

Cannabis is not usually considered to produce physical dependence, although tolerance to the effects occurs, and physical withdrawal symptoms have been noted after cessation of heavy use. Psychological dependence has been noted in some users. Cannabis increases the workload of the heart and people who suffer from heart disease, angina and blood pressure are particularly vulnerable to the adverse effects of cannabis. Another high risk group are those with pre-existing mental illness, particularly schizophrenia and depression, because cannabis may trigger off a relapse or make symptoms worse. There has been a steep increase in the number of patients admitted to Swedish psychiatric hospitals with a diagnosis of acute anxiety, delirium, schizophrenia and psychosis attributed to cannabis use.

Among the other known or suspected long term effects of continuous cannabis use are decreased sperm count and sperm mobility, interference with ovulation and pre-natal development and impaired immune response. There is now a considerable body of evidence concerning the adverse effects of cannabis on both male and female reproductive systems. Not only does the drug affect the secretion of hormones and the reproductive glands directly but it also inhibits sexual activity and produces long-term alterations in the development of the reproductive

system in male and female offspring in test animals. In addition, cannabinoid metabolites are highly fat soluble and remain in the body for several weeks. During that time the chemicals are concentrated in areas of the brain known to influence various aspects of sexual behaviour as well as in the endocrine and sex glands.

There is also increasing evidence of problems arising if cannabis is smoked during pregnancy because the infant is exposed to the drug via the placenta and also through breast milk after it is born. Studies in the U.S. report that up to 27% of pregnant women had used cannabis during pregnancy. The babies born to these mothers weighed less than those born to non-users and were significantly shorter in length. The cannabis babies had less muscle mass than normal and were more jittery, more irritable and less attentive. If the mother also used alcohol and tobacco, the combined effect of the three drugs was greater than an individual drug.

THC is known to suppress some aspects of the body's immune system and there have been reports of cannabis-related enhanced susceptibility to infections such as herpes, legionnaires disease and to listeria.

There is no pharmacological effect of cannabis or the cannabinoids which would cause an inevitable progression to more dangerous drugs such as heroin. Most cannabis users do not go on to use heroin but statistically it appears that heavy cannabis users are much more likely to use heroin than non-users. Cannabis is now recognised as one of the 'gateway' drugs, together with tobacco and alcohol. American studies show that early teenage use of tobacco and alcohol is a strong statistical predictor of early use of cannabis which in turn if used heavily is a predictor

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of subsequent use of heroin and especially of cocaine. The limited Irish research tends to confirm this overall statistical progression in drug abuse.

Heavy users of cannabis may suffer from apathy and loss of ambition - the so-called amotivational syndrome, but it is difficult to sort out the exact relationship between this condition and the use of cannabis. The same difficulty applies in relation to the association between behavioural disorders and chronic heavy use of cannabis. Because of an awareness of this effect there has been a significant decline in the use of cannabis by young Americans. In 1978, 11% of American teenagers reported daily use of cannabis; by 1989 this had fallen to 2.5%. When asked about their reasons for giving up cannabis, 63% were concerned about health risks and 53% reported that psychological effects were an important reason, as was worry over loss of energy. Many daily users reported that they had less interest in other activities, that they could not think clearly and that it damaged their school or work performance.

On the basis of the evidence to date some of the effects of cannabis are harmful to human health but the extent of the risk is unknown. An authoritative American study of cannabis concluded that little is known for certain about the effects of marijuana on human health, but what is suspected about these effects justifies serious concern.

TOBACCO

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Tobacco comes from the dried leaves of *Nicotiana tabacum*, a plant which can be grown in most parts of the world including Ireland. Most of the tobacco used in this country comes from the U.S.A., and almost 93% of it is used in the form of cigarettes. Over 430,280 tons of mostly low-grade tobacco were grown in seven of the E.U. countries in 1991, supported by subsidies from the E.U. of £1,064 million, compared to the £7.2 million a year spent by the E.U. campaigning against smoking. Cigars are made from darker tobacco rolled up in tobacco leaves. This darker stronger tobacco can also be smoked in a pipe. Indeed this was the way tobacco was first introduced into Ireland at the end of the 16th century from America. The American Indians used tobacco for medicinal and religious purposes. Despite warnings about its effects on health, the use of tobacco spread quickly and in 1590 a tax was imposed on the drug, a precedent which continues to the present day. Up to the 18th century pipe smoking predominated until it was replaced in popularity by snuff-taking. Cigarettes were introduced after the Crimean War when soldiers had seen Turkish people smoking them. Cigarette smoking became a truly popular activity after the advent of mass production. The fact that tobacco taxes are a convenient and lucrative way of raising State revenue tends to temper reaction to the health consequences of long-term use of tobacco. However, more recently these health consequences have been acknowledged.

Legal Status.

The 1908 Childrens Act prohibited the sale of tobacco to children under sixteen, but children could still legally buy, possess and smoke the drug. There have been

no prosecutions under this Act in recent years. This Act was updated by means of the *Tobacco (Health Promotion and Protection) Act 1988* which reiterated the ban on sales of tobacco to under 16s but which increased the penalty from £2 to £500. The sale of cigarettes in packets containing less than 10 cigarettes also attracts a £500 maximum fine. Under this new legislation the Minister for Health has brought in the *Tobacco (Health Promotion and Protection) Regulations 1990* to prohibit or restrict the smoking of tobacco in designated areas such as aircraft, trains, public service vehicles, hospitals & clinics, schools, public buildings belonging to or occupied by the State, cinemas, theatres, concert halls, the kitchens of hotels, restaurants etc., as well as supermarkets and grocery shops. The penalty for an individual who commits an offence under these regulations is a £100 fine, while the owner or person in charge who permits smoking in a designated area or facility, faces a £500 fine or 6 months in jail or both.

The 1988 Act also prohibits the import, manufacture, sale or advertising of smokeless tobacco products (e.g. Skoal Bandits ®) designed for oral use.

Commercial manufacture of tobacco requires a licence, but the main legislative control over the availability of tobacco is exercised by the levying of excise duty and Value Added Tax. At present taxes account for nearly three-quarters of the price of a typical packet of twenty cigarettes. The total revenue raised from taxes on tobacco came to over £528 million in 1992.

The advertising of tobacco is controlled by Regulations under the *1978 Tobacco Products (Control of*

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Advertising: Sponsorship and Sales Promotion) Act. As a result the advertising of tobacco is almost totally confined to adult newspapers and magazines. The Government can curtail and control the amount of money spent on sponsorship of sporting and cultural events by tobacco companies. The content of the advertising is also controlled with a requirement that a health warning be included on both the packet and on advertising. Young people are protected because advertising is prohibited in publications directed primarily at those under eighteen and sponsorship of youth events is banned. From December 1st 1987 cigarette advertising on shop fronts was prohibited; tougher health warnings have been prepared and these must be in rotation on the packs while all point-of-sale promotional material in shops must carry a health warning.

Prevalence and Availability

Cigarettes became widely used in most countries during and after World War 1, but in Ireland only became really popular during the Second World War. The number of cigarettes smoked in Ireland peaked in the late 1970s and has been declining since then, decreasing from 7.7 billion in 1978 to 5.7 billion in 1992. Statistics for the year to the end of June 1993, show that 28% of adults aged 15 years and over smoke. Among 16-24 year olds the figure was 27%. The highest level of smoking was in the 25-34 age group. 31% per cent of men and 26% of women now smoke compared to 49% and 37% respectively in 1973. A 1990 Eurobarometer Survey of those aged 15 years and over showed that 16% of Irish smokers smoked fewer than 10 cigarettes per day, 69% smoked between 10 and 24 per day and 8% smoked over 25 cigarettes per day

with 8% smoking cigars/pipes.

Preliminary analysis of recent surveys of smoking behaviour among second level school pupils suggests that the prevalence of smoking among young people, while still unacceptably high, may have plateaued and may even be declining in the younger teenage group.

Short-Term Effects.

Tobacco smoke contains more than 1,200 different chemicals in the form of particles and gases, up to 5% of which is the toxic gas carbon monoxide. The particles consist of tar in which the drug nicotine is dissolved. All the carbon monoxide, 90% of the nicotine and 70% of the tar is retained in the lungs when smoke is inhaled. Nicotine is a very poisonous drug which affects the heart, blood vessels, stomach, kidneys and the central nervous system. Nicotine gives a feeling of relaxation, allows a smoker to face stressful situations more easily and to carry out boring tasks more efficiently. Heart rate and blood pressure are increased and appetite is reduced. First time smokers often suffer from nausea and vomiting.

Hazards of Long-term Regular Use.

Tolerance rapidly develops to the effects of nicotine and people who begin to smoke tend to increase their consumption until they smoke regularly. If they stop, they experience withdrawal symptoms such as restlessness, irritability and depression, which can be suppressed with nicotine. The U.S. Surgeon General has concluded that cigarettes and other forms of tobacco are addictive; that nicotine is the drug which causes

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dependence and that the pharmacological and behavioural processes that determine tobacco dependence are the same as those that determine dependence to drugs such as heroin and cocaine. Indeed many heroin dependants state that it is easier to give up heroin than it is to give up smoking. However, the limited success of nicotine-containing chewing gum in helping people to stop smoking indicates that there is more to the smoking habit than simply nicotine dependence.

The more one smokes and the longer one smokes the more likely one is to suffer from heart disease, heart attacks, blood clots, strokes, bad circulation, ulcers, lung infections, bronchitis, emphysema, cancers of the lung, mouth and throat. 90% of lung cancers are believed to be caused by the the cancer-inducing chemicals of cigarette tar. (In 1992, 1,033 Irish men and 500 Irish women died from lung cancer).

There have been no studies of the causes of death among smokers in Ireland, but the Department of Health estimates that over 6,000 deaths each year are directly attributable to smoking. The World Health Organisation has stated that the annual worldwide toll of premature deaths caused by tobacco is around 3 million and will continue to rise into the next century. Deaths among women have also increased as the use of tobacco by women has increased. In most affluent countries heart disease is now the most frequent cause of death in women as well as in men. Lung cancer death rates in affluent countries are now rising much faster in women than in men. From studies carried out in other countries it is known that on average each cigarette smoked shortens the life of a habitual smoker

by five and a half minutes. Heart attacks are three times as frequent in American middle-aged men who smoke more than 15 cigarettes per day as in non-smokers. A smoker consuming up to ten cigarettes per day has to expect at least a 3 to 10-fold risk of a tumour, a risk which rises steeply as the number of cigarettes smoked per day increases.

Smoking and Pregnancy.

A recent study found that decreased fertility among women who wished to start a family was associated when cigarette smoking. The health effects of foetal exposure to cigarettes smoked by the mother has been extensively studied. Infants born to mothers who smoke during pregnancy weigh on average, 200g less than those born to non-smokers. There is also evidence of an increased risk of premature births, stillbirths and early death of the newborn baby where the mother smokes more than 5 cigarettes per day. In long-term follow-up studies, children of cigarette smokers have been shown to be smaller and to develop less well intellectually and emotionally compared to children born to non-smokers. Babies under 2 whose parents smoke are much more likely to develop bronchitis and pneumonia than the children of non-smokers.

Passive Smoking.

The smoke that smokers take into their lungs is called mainstream smoke. The smoke from the burning tobacco in a cigarette lying on an ashtray or held between the fingers is called the sidestream smoke. This is inhaled by non-smokers who are exposed to

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cigarette smoke at home, at work and in leisure environments. Because of this "passive" smoking, almost all non-smokers have traces of nicotine in their bodies. Some children may be exposed to the equivalent of 150 cigarettes a year through this form of pollution. Sidestream smoke is different to the smoke inhaled by active smokers in that it has 70% more tar, 2.5 times more carbon monoxide, 2.7 times more nicotine and up to 100 times more carcinogenic compounds. In the case of one, nitrosamine, its content can be up to 830 times higher in sidestream smoke compared to mainstream smoke. There is increasing evidence that passive smoking is a major cause of premature death in non-smokers. One estimate from the US puts the figure at about 47,000 per year. Many reports show that non-smokers married to smokers have a higher rate of lung and other cancers than non-smokers married to non-smokers or that they are more likely to die from heart disease. Up to 50% of non-smokers who die from lung cancer are passive smokers. A study of children exposed to passive smoking by their parents has indicated that they have a much greater chance of suffering from the ear disease 'glue ear'.

Smokeless Tobacco.

Smokeless tobacco products include chewing tobacco and snuff and consist of tobacco mixed with sweeteners, flavourings and scents. In Ireland snuff is usually sniffed, but in the U.S. it is 'dipped', that is, held in the mouth between the lip and gum. Sales of moist snuff have increased recently and it is believed that 16% of teenage boys use snuff in the U.S.A. In some parts more boys use snuff than smoke cigarettes regularly. One form is marketed in sachets designed to be

held in the mouth (Skoal Bandits ®). There is strong evidence that such tobaccos cause cancer of the mouth. It is also believed that use of moist snuff increases the frequency of gum recession (leading to loss of teeth) and of leukoplakia which are white patches in the mouth, 10-30% of which have potential to become malignant. It is known that nicotine is released into the blood at levels comparable to smoking cigarettes leading to long-term nicotine dependence. These tobaccos also contain nitrosamine-type carcinogens at levels higher than permitted in food. Lead and cadmium levels are also high and could potentially harm a baby if the product were used during pregnancy. Because of concern about the possible abuse of these products by young Irish people similar to the rapid increase in use in the U.S., the importation and distribution of these products is banned under Section 6 of the *Tobacco (Health Promotion and Protection) Act 1988*.

More detailed information on smoking is available on request from the Health Promotion Unit.

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The most widely used drug worldwide is caffeine, a stimulant found in coffee, tea, guarana, mate, cola drinks, in some tonics and in many analgesic (pain killing) capsules and tablets. A similar drug is found in cocoa and chocolate.

Coffee is the strongest of the beverages. One cup of 'real' coffee (freshly ground beans as opposed to instant) may contain caffeine equivalent to the minimum dose for stimulation. Coffee is made from the roasted beans of the coffee bush and was first cultivated in Yemen in the 9th century. Coffee was introduced into Western Europe at the end of the 16th century and soon spread rapidly in popularity. Half of the 4.5 million tonnes produced each year is used in the U.S.A. Coffee beans contain 1 - 2% caffeine. A cup of tea contains less caffeine than 'real' coffee but can contain as much as a cup of instant coffee. Tea consists of the dried leaves of a shrub grown in China, India, Sri Lanka and Kenya. It was introduced into Europe in the 16th century, initially as a medicine, but soon became a popular 'pick-me-up'. Tea is more popular in Ireland than coffee (3.5 kg. of tea per person each year, compared to imports of 1.6 kg. of coffee beans per person per year). Tea leaves contain an average of 3% caffeine.

Guarana and Mate Leaf are prepared from South American plants and are also used to make beverages. Guarana has the highest known natural content of caffeine (up to 5%). Mate is used allegedly because it has a lower tannin content than tea. It has a caffeine content of up to 2%.

Cola drinks contain caffeine from two sources; some is present in the form of an extract of cola seeds grown in West Africa and some is added during manufacture.

This added caffeine comes from the decaffeination of coffee. Cola drinks generally contain much less caffeine than coffee, but small children who drink large amounts of such soft drinks could be consuming stimulatory amounts. Parents who discourage young children from drinking tea or coffee should also discourage them from various forms of cola.

Chocolate is prepared from the cocoa bean grown in the tropics but particularly in West Africa - mainly the Ivory Coast. Cocoa contains between 2 and 3% of theobromine which is chemically related to caffeine, as well as containing a small amount of caffeine (0.2%).

Caffeine itself is a white powder used as a mild stimulant in some medical products. It is also used for some headaches (especially migraine). Caffeine is also an ingredient of some cocaine and amphetamine substitutes ("look-a-likes") sold as stimulants and slimming aids.

Legal Status.

Caffeine, whether used in medicines or in beverages, is not subject to any legal prohibitions on manufacture, sale, distribution or possession in Ireland. EC regulations restrict the use of the term 'decaffeinated' to coffee extracts containing less than 0.3% by weight of caffeine. Coffee is decaffeinated when the beans are still green. They are usually treated with steam to make them swell, at which stage they are treated with chemical solvents (e.g. methylene dichloride), steam or carbon dioxide to remove the caffeine. The beans may be steamed to remove any residual solvent (which could be toxic or carcinogenic) and then roasted to produce the typical coffee aroma and taste.

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Prevalence and Availability.

Caffeinated drinks are sold without restriction in grocery shops, supermarkets, etc. They are widely used at various rest breaks during the work day. It is usual for tea or coffee to be offered as hospitality to visitors and virtually every restaurant or cafe in Ireland offers a choice of tea or coffee.

It can be seen from consumption statistics just how common the use of these drinks is. Total world consumption is estimated at 120,000 tonnes of caffeine equivalent to about 70 mgs per person. In Ireland daily consumption of tea per head averages 5 to 6 cups, the average daily amount of caffeine from these alone would be about 270 mgs. Each cup of brewed coffee provides 100-150 mgs of coffee although Irish people drink the equivalent of only one third of a cup of brewed coffee per day. Instant coffee gives about 70 mgs (Irish people drink an average of two cups of instant coffee per day) and a can or bottle of Cola from 17-55 mgs, depending on the brand. Irish people drink approximately 15 litres of Cola per person each year. A bar of milk chocolate contains about 40 mgs of theobromine and 6 mgs of caffeine which is similar to the levels in hot cocoa. These compare with the standard pharmacologically active stimulant dose for caffeine of 200 mgs. As well as caffeine from drinks, you could be adding to the daily dose by using some of the well known brands of headache-reliever, which can contain up to 50 mgs of caffeine per tablet or one of the caffeine containing 'tonics'. A recent study of caffeine consumption among a small number of Irish people indicated an average caffeine consumption of 350 mgs per day compared to a reported value of 380 mgs in the U.S. and 315 mgs in Britain.

Short Term Effects.

Caffeine stimulates the nervous system. In moderate amounts (150-250 mgs or two cups of coffee) the drug increases wakefulness, reduces fatigue and postpones the onset of sleep. Mental activity is increased and people can perform physically exhausting work for longer. It has been claimed, that gastric secretion is increased by caffeine, raising stomach acidity, thereby increasing the risk of peptic ulcers. Doubt has recently been cast on this belief because decaffeinated coffee can produce similar effects. At higher doses the heart muscles are stimulated, blood vessels in the brain narrow (thus relieving some types of headache) and more air is drawn into the lungs. Caffeine is also a weak diuretic, i.e. increases the excretion of urine. Theobromine is a stronger diuretic than caffeine.

Hazards of Excessive Use.

The effects of more than 1 gramme of caffeine (or 15 cups of coffee) taken at one time, include disturbances of the senses, such as ringing in the ear, together with insomnia, tremors, increased heartbeat and gastric irritation. Restlessness and excitement may progress to delirium. Approximately 10 grammes is the lethal dose but deaths due to caffeine poisoning from coffee, tea or soft drinks would involve the consumption of approximately 75 cups of coffee, 125 cups of tea or 200 cola drinks at one time and are therefore unlikely. However, eleven deaths due to fatal overdoses (suicidal and accidental) following the consumption of appetite suppressants and "pick-me-ups" containing large amounts of pure caffeine have been reported in a recent survey.

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Long Term Effects and Hazards.

People who drink seven or more cups of strong coffee a day may feel anxious and irritable, and have muscle tremors and headaches. The stimulant effect may also cause chronic insomnia, but all these disturbances will clear up once caffeine intake is reduced.

Tolerance to the effects of caffeine develops and there is a well-established caffeine withdrawal syndrome, which can be noticed after regular use of about 300 mgs a day. After stopping caffeine intake the long-term user feels less alert and relaxed, more irritable and drowsy, and suffers from headaches which can often be severe. This tiredness and irritability can be experienced if people miss their morning coffee. Psychological dependence can develop to the extent that people find it hard to stop drinking coffee even for medical reasons.

The reported link between heavy coffee consumption and heart disease may be due more to other aspects of the user's lifestyle, such as cigarette smoking, than to the coffee. Most recent studies appear to show that there is no reason to implicate caffeine as a risk factor for heart attacks. There is an association between coffee consumption and cholesterol levels although results vary between different studies. It is now suggested that different brewing methods may influence the results. There is strong evidence to suggest that methods of preparing fresh coffee which involve boiling the beans for a long period rather than using a filter etc. are more likely to cause an increase in cholesterol levels. Intensive research is under way to identify the chemicals responsible.

Data from tests on animals indicate birth defects due

to caffeine consumption during pregnancy. Despite the fact that these findings are not conclusive, concern over the effects of the drug on unborn babies led the U.S. authorities to advise pregnant women to limit their caffeine intake, and also to remove caffeine from the list of substances that are Generally Recognised As Safe (GRAS), for addition to foods, and to place it on an interim list pending the outcome of additional research. A number of studies have been carried out to establish whether there is any association between caffeine consumption and problems during pregnancy. It is known that caffeine can cross the placenta and so the foetus and new born baby are exposed to the drug. The results of the research are however reassuring in general. Studies of over 32,000 mothers indicate that any problem in their babies is largely due to the smoking habits of women who were heavy coffee drinkers. It appears that there is no acceptable evidence that caffeine causes birth defects in humans at current levels of use. The breakdown and elimination of caffeine is reduced threefold in the mother during the later stages of pregnancy. Unpleasant symptoms of jitteriness and nervousness may occur when a pregnant woman continues a level of caffeine consumption which would have had no effect at other times. There do not appear to have been any short or long-term effects on the babies in such cases.

While caffeine is known to be mutagenic (i.e. changes the genetic material in individuals or cells so that they are permanently different from their predecessors), the weight of evidence from studies in animals and in humans indicate that caffeine does not induce or promote cancers in humans.

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Amphetamines are synthetic stimulants first produced in 1887, but not used medically until the 1930's. During the Second World War and the Vietnam War, amphetamines such as dexamphetamine (Dexedrine®) were used to increase the performance and endurance of soldiers. In the 1950's and 1960's they were widely prescribed as slimming tablets and used to treat mild depression. They are now recommended only for the treatment of narcolepsy (pathological sleepiness) and hyperactivity in children. Several million people in parts of East Africa and South West Arabia are believed to be dependent on Khat, the fresh leaves of which when chewed, release cathinone, an amphetamine-like drug into the body.

The non-medical use of amphetamines was very popular among teenagers during the 1960's, when large quantities of 'purple hearts' were taken to stay awake at parties and dances. Another popular drug was methylamphetamine or 'speed'. Amphetamines were controlled in 1970 in an attempt to reduce their availability because of diversion of legitimate supplies onto the black market.

Amphetamines may be taken by mouth, dissolved in water and injected, sniffed up the nose, or smoked. A new smokeable form of methylamphetamine hydrochloride is called "Ice" or "Crystal" because of its transparent, sheet-like crystals. This very strong form of 'speed' is sufficiently volatile to vaporise in a pipe so that it can be inhaled through the lungs. Ice is manufactured in illegal laboratories either from a chemical called phenylacetone or from ephedrine, a drug chemically related to the amphetamines, used in some cough and cold products. Ephedrine, as a starting material produces the most potent form of Ice,

which is why it and phenylacetone are coming under stricter control (see the section on *Drug Laws* for more details).

A number of other drugs such as methylphenidate (Ritalin®), phenmetrazine (Preludin®) and fenfluramine (Ponderax®) have amphetamine-like effects; the latter two are usually used as slimming agents though exercise and diet may be more effective for losing weight, while methylphenidate is mainly used for narcolepsy and hyperactivity.

Legal Status.

Most of the amphetamine-type drugs are controlled by the *Misuse of Drugs Acts*. Their unauthorised production, supply or possession is an offence, as is allowing premises to be used for producing or supplying the drugs. Amphetamines are not available for normal prescribing by doctors. *The Medical Preparations (Control of Amphetamines) Regulations 1970* prohibit the manufacture, preparation, importation, sale and distribution of various amphetamines. The Minister for Health has power to grant a licence to allow the supply of amphetamines to a patient who requires it for treatment. Such supplies cannot be obtained from normal pharmacies but only from a central depot. The idea is to reduce the leakage of legal amphetamines into the black market through forged prescriptions, excessive prescribing or burglaries from pharmacies.

Prevalence and Availability.

Prior to the strict control measures, amphetamine abuse was a significant problem in Ireland. One study conducted in 1969/70 indicated that over 11%

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of boys in a Dublin remand home had taken amphetamines. Six months after the regulations were introduced this had fallen to 0.6% of the boys. It is generally accepted that the non-availability of legal amphetamines has dramatically reduced the abuse of amphetamines in Ireland. The medical use of amphetamines has also declined from over 2,000 prescriptions in 1972 to 339 in 1990. Some black market amphetamines (at a cost of up to £80 per gramme) are still smuggled into the country. However, the numbers prosecuted by the Gardai or reporting amphetamine use to the Drug Clinic have remained relatively low in comparison to the numbers using other illicit drugs and also in comparison to other countries, e.g. Sweden and the U.K., where amphetamine abuse is a significant part of the intravenous drug abuse scene.

Short-Term Effects.

The effects of small doses of amphetamines taken orally are very different to the effects of high doses injected intravenously. A moderate dose of less than 30 mgs stimulates the nervous system and arouses and activates the body in the same way as its natural adrenalin prepares the body to face emergencies and stress. Breathing and heart rate speed up, blood pressure increases, the pupils widen and appetite is suppressed. The user feels more active, more alert and energetic. There is a lessening of fatigue and an increase in mental activity, with better concentration and clearer thinking. The change in mood leads to a general feeling of well-being. Severe psychological dependence can develop because of the pleasant effects. Some people may experience irritability, confusion and dizziness after repeated small doses. Withdrawal reactions may occur such as fatigue and depression.

High doses taken by injection, sniffing or smoking give rise to a 'rush' of pleasurable experience. Some 'speed' users go on a binge or 'run' of injections lasting several days. They become overactive, boastful and indulge in repetitive behaviour e.g. repeated cleaning of shoes. High doses can produce panic, hallucinations and feelings of being persecuted. Injectors of amphetamines run all the risks of infection outlined in the section on *Drugs and Drug-related Problems*.

The smoking of the Ice form of methamphetamine means that the effects are similar to those which follow an injected dose without the dangers associated with syringes and needles. The effects including the adverse effects of Ice persist for hours compared to a few minutes when cocaine is smoked.

Hazards of Long-Term Use.

Tolerance to many of the effects of amphetamines develops rapidly, with some users able to take up to 15 gms per day compared to the normal stimulant dose of 10 mgs. When the drug is discontinued a user will feel deeply depressed, fatigued and sleepy and extremely hungry, because the amphetamine has merely postponed fatigue and hunger and depleted the body's own reserves of energy. This feeling is called the 'crash'. Regular users of high doses are liable to develop an 'amphetamine psychosis' which resembles schizophrenia with thought disorders, hallucinations and feelings of being persecuted. These latter feelings may lead to hostility, aggression and violence as individuals defend themselves against imaginary enemies. The psychosis usually disappears when drug-taking stops, but in many people it may persist for some considerable time, unlike the similar

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psychosis which develops with Cocaine.

One of the catchphrases of the 1970s was 'speed kills', because it was widely believed that long term use of amphetamines would be fatal. In fact very few deaths have been caused by amphetamines. Violence rather than toxicity has been the major cause of death among amphetamine users. However, the hazards of injecting, and the lack of sleep and food debilitates the heavy user, lowering resistance to disease, and can lead to serious damage to health.

Ecstasy (MDMA).

MDMA is named after its chemical name, methylenedioxymethamphetamine. It is also widely known as Ecstasy because of the happy sociable emotionally open feeling it causes in users. MDMA is often labelled a 'designer drug' but it was in fact first synthesised in Germany in 1914 as a potential appetite-suppressant based on its chemical relationship to amphetamine ('speed'). However it was never marketed as a medicine and was ignored until it was rediscovered in the 1970's by a group of American psychotherapists who used it to facilitate communication in relationships (e.g. marriage guidance). It was also used to create emotional openness in those with suppressed memories of rape or child abuse and in the terminally ill. Since it is a difficult drug to classify, being neither a true hallucinogen like LSD nor a true stimulant like amphetamine, some psychiatrists coined the term 'empathogen' to describe its apparently unique effect of reducing enmity and promoting harmony. MDMA is not available pharmaceutically. All supplies are produced illegally in backstreet laboratories using, as a

starting material, the known carcinogen Safrole.

Because of its reputation, street abuse of MDMA as a so-called 'love drug' became widespread in the U.S. in the later 1970's but the drug has only become popular on this side of the Atlantic since the advent, firstly of the "Acid House" music scene, and, more recently, of the "Rave" dance phenomenon. MDMA is the most popular of a group of drugs referred to as "Dance Drugs" because of their use during "Raves". Other dance drugs include LSD; "Eve" and MDA which are relatives of MDMA; Ketamine, which is a general anaesthetic, known as "Vitamin K", "Special K" or "Kit Kat" when sold illegally on the street. The most recent addition to the dance pharmacopoeia is another anaesthetic; Sodium Oxybate, known in street jargon as GBH, the initials being derived from an inversion of the chemical name, Gamma Hydroxy Butyrate.

Legal Status.

MDMA was included in Schedule 1 of the Misuse of Drugs Acts in 1987. This means that it cannot be prescribed by doctors, sold or distributed and it is also illegal to possess it. The chemicals used to produce the drug illegally are strictly controlled under E.U. and national regulations.

Prevalence and Availability.

MDMA is sold as home-made tablets and capsules which have a variety of different street names including not only Ecstasy but also E, Edward, Essence, XTC, ADAM, Dennis the Menace, Disco Burgers, Disco Biscuits, Love Doves, Phase 4's, Rhubarb and

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Custards, Uniteds, Cities, M and Ms, Shamrocks etc. Some samples seized in Ireland have contained a related drug, Methylenedioxyethamphetamine or MDEA. In street terms this is called "Eve" because MDMA is known as ADAM. Samples of a more hallucinogenic amphetamine, MDA, have also been encountered. These various forms are sold for up to £25 each. It has been reported from other countries that mixtures of LSD and amphetamine have been sold as Ecstasy. In Ireland at least one sample of supposed Ecstasy was found to be a mixture of ephedrine (a drug used in cough and cold products chemically related to amphetamine) and LSD. Some consumers have been sold paracetamol tablets and even brewers yeast tablets instead of Ecstasy.

Ecstasy is an excellent example of the unpredictability of the drug scene because it suddenly arrived in Ireland in the early 1990's. In 1990 there were no prosecutions relating to it but in subsequent years there were up to 60 prosecutions each year. Similarly, nobody sought treatment for Ecstasy use from the Drug Treatment Centre Board in 1991 but in the following years a significant number of patients presented for treatment (186 in 1992).

Short Term Effects.

The effective dose of MDMA lies between 75 and 150 milligrams, with many street products containing about 100 mg. The effects start about 30 minutes after swallowing the drug, reach their peak in 1 1/2 hours and then subside after about 4 hours. Most Ecstasy is swallowed but cases of inhalation ('snorting') and injection have been reported. The sought after effect

is that of being relaxed but energetic, happy and calm with a warm friendly feeling towards others. Aggressive, violent feelings are suppressed, there may be increased self-awareness and increased perception of visions and music. No true hallucinations occur at normal dose levels and, while the effects of pure MDMA are not identical to those of amphetamine, there are some similarities in that young people get the stamina to dance for very long periods at raves.

In addition to these effects, MDMA causes a rise in blood pressure, heartbeat and temperature. People with a history of blood pressure, heart disease or asthma should most definitely not use this drug. Other physical effects include a tingling sensation on the skin, jaw stiffness and grinding of the teeth. Many users report experiencing a dry mouth, tremors, palpitations and sweating after using the drug. When the effects subside there is frequently a feeling of tiredness and lassitude for up to 24 hours, which is aggravated by the fatigue resulting from prolonged dancing.

Hazards of Short Term Use.

Deaths among Ecstasy users have been reported from the U.S., Britain and Ireland. In the U.S. deaths have been due mainly to delusional behaviour under the influence of the drug (e.g. climbing electricity pylons) or to pre-existing heart or asthmatic disease. In Ireland some of the deaths which have occurred are believed to have involved massive overdoses related to the presence of huge quantities of tablets being smuggled into the country in body cavities. Many of the deaths in Britain have resulted from heatstroke. The drug causes a serious rise in body temperature (up to 41°

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centigrade). The hyperthermia is worsened by the steamy atmosphere at the Rave and the body heat generated by prolonged frenetic dancing. Death subsequently occurs due to muscle breakdown, clotting of blood inside the body and kidney failure.

A recent unexpected problem resulting from the drug is that of hepatitis or jaundice. In some cases the liver damage was sufficiently severe to warrant liver transplantation and deaths due to the liver damage have occurred. The cause is as yet unknown. Experts suggest that the liver damage could have resulted from hyperthermia or that it could be due to a direct toxic effect of the drug itself, of one of its breakdown products, of a contaminant produced by mistake during the synthesis or of an additive used to 'cut' the pure drug. Other serious complications include cases of convulsions (fits), stroke and severe chest pains.

Many of the side effects while unpleasant are mild and would be expected from an amphetamine-type drug. Larger than normal doses can cause nausea, disorientation, visual distortions and lack of coordination. Some users of 'normal' doses report feelings of agitation, high blood pressure, muscular pains, insomnia, lethargy, while some also experience intense flashbacks. Since the drug is an appetite-suppressant, frequent use results in anorexia and weight loss, this latter being aggravated by the physical activity of Rave dancing.

Many users report feelings of depression and anxiety following moderate use of the drug. These two symptoms have been frequently encountered in patients attending the Drug Treatment Centre Board after using

MDMA. Such patients also suffer from panic attacks, paranoia and psychotic symptoms. While many of the side effects are amphetamine-related, it can be difficult to establish the contributory role of other drugs such as LSD, Amphetamine and Cannabis which are often taken at the same time. The effect of combining Ecstasy with alcohol is largely unknown but the alcohol would certainly add to the dehydration caused by Ecstasy and could increase the likelihood of heatstroke.

In the U.K. some users report what they call "head rushes" which involve a blanking out of sensory perceptions of sight and hearing for up to three minutes while dancing under the influence of MDMA. This may be due to an effect of the drug on brain cells and brain chemistry or it could be due to the inadvertent use of Ketamine or GBH falsely sold as Ecstasy. Ketamine in small doses causes hallucinations unlike Ecstasy, but it also causes numbness, blackouts and temporary blindness. With Ketamine aggressive behaviour may occur. Vomiting is a common side effect with this and other anaesthetics, e.g. Sodium Oxybate (GBH), which can also cause convulsions, low blood pressure and respiratory arrest.

Long Term Effects.

Because Ecstasy has never been officially used as a medicine and because its frequent widespread use by large numbers of young people is so recent, there is little reliable information on the long term effects of the drug. The general belief is that MDMA is not a drug of addiction but it is premature to make a definitive statement about its dependence potential. Firstly, it is an amphetamine derivative and other amphetamines

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have the potential to cause psychological dependence. Secondly, a number of users in other countries have developed tolerance to the effects of the drug, having to increase dosage up to five times normal to obtain the same effect. This tolerance may take some weeks to disappear and is an indicator that, with prolonged use, dependence could be a possible problem.

Studies in rats and in monkeys have shown that doses of MDMA comparable to those used by some Ecstasy users can cause damage to certain cells which produce a key chemical messenger in the brain called 5-HT or Serotonin. Changes in the level of this chemical are believed to be related to the development of depression and similar conditions. However, although the results of the experiments with rhesus monkeys are particularly worrying, because of the close similarity between the human and monkey brains, there is no clear evidence that MDMA use causes brain damage in humans. This is largely due to the fact that no studies have been completed. There is a belief among many researchers that Ecstasy has the potential to cause brain damage among street users. Some of the psychiatric complications already described above, e.g. the depression, the panic attacks and psychosis, could, it has been argued, be a sign of damage to the nerve cells but more research work is clearly needed before a definite conclusion can be reached.

There is no information available on the effect of the drug during pregnancy. However, given the documented effects on brain cells, the effect on blood pressure and heartbeat as well as the anorexia associated with the drug, pregnant women would be well advised

not to use the drug. Anecdotal reports from the U.K. suggest that some female users have menstrual difficulties but this could also be related to the intense physical activity associated with Rave dancing. The reputation of MDMA as a "Love Drug" and the emotional openness it creates could be a factor in unsafe sex with all of its consequences.

COCAINE

Cocaine is a powerful stimulant, similar in its effects to amphetamines, which is extracted from the leaves of the Coca bush. Coca leaves have been chewed (at least since the 6th century A.D.) by the Indians of the Andean regions of South America to relieve hunger and fatigue, for minor medical complaints and generally to make life and work bearable in the cold inhospitable mountainous regions of Bolivia, Colombia, Ecuador and Peru. The Coca leaf contains less than 1% of cocaine and is chewed with a combination of lime and starch. Nine million kilogrammes of legally grown leaves of the plant, once known as the "Divine plant of the Incas" are used every year in Peru alone. At that time Coca chewing was a sign of high status in Inca life, but it is now associated with the poorer classes, a direct contrast with the chic jet-set image of cocaine in advanced western societies.

Cocaine was first extracted in 1855 and it became a widely used local anaesthetic, stimulant and tonic. Up until 1910 Coca Cola® contained cocaine, but since then decocainised leaves are used to flavour this popular drink. The extracted cocaine is sold for medical use as an anaesthetic in eye, ear, nose and throat surgery, and in Brompton Cocktail, a mixture of cocaine, morphine or heroin, alcohol and syrup, used to relieve the pain of terminal cancer.

Cocaine has had a reputation as a rich man's drug because of its expense. Although the raw material is cheap (1 tonne of coca leaves costing about \$2000 in South America would provide 2 kg of pure cocaine at a wholesale price of \$40,000), profits from illegal production in some South American countries have a major corrupting influence on those countries. Illicit cocaine exports are believed to be equal to an

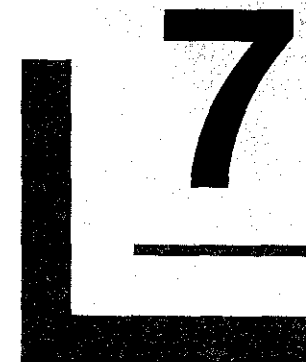
estimated 12% of Colombia's 1987 legal exports, 25% of Peru's and up to 95% of Bolivia's. The illegal cocaine industry may employ up to 1 million people from the Andean Region in the growing, processing and transport of the coca leaves and the refined cocaine. The bulk of the leaves is grown in Peru and Bolivia (50,000 tonnes per annum each) although most of the cocaine is processed in, or smuggled through, Colombia, which, along with Ecuador, provides about 15,000 tonnes of leaf.

Legal Status.

In America controls were introduced in 1914, partly because of fears about many patent medicines being laced with dangerous cocaine and opiates, and partly because of racist-inspired fears. In Britain controls were introduced during the First World War as part of the Defence of the Realm Act in 1916, to protect soldiers on leave.

In Ireland at present cocaine and coca leaf are controlled by the *Misuse of Drugs Acts*. Coca leaf is included in Schedule 1, because it has no recognised medical use, so it can only be supplied or possessed by persons holding a licence, for research or analysis, from the Minister for Health.

It is an offence to grow the coca plant, except under licence from the Minister for Health. Cocaine and its salts can still be prescribed by doctors, and dispensed by pharmacists, but it is illegal to produce, possess or supply the drug, except on prescription. It is also illegal to allow premises to be used for producing or supplying cocaine.



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Prevalence and Availability.

It is believed that cocaine is becoming less expensive and more available because of over-production in South America. It is known that 25% of the coca leaf production is used legally in Peru and Bolivia by native chewers. 2% is legally exported to flavour Cola drinks and to manufacture pharmaceutical cocaine. At least 85,000 tonnes of leaves are available for the illegal production of coca paste (420 tonnes from 85,000 tonnes of leaves) from which 160 tonnes of pure cocaine is obtained. It is estimated that at least 130 tonnes actually reach the black market. However, this is about 50 tonnes more than the current estimated world demand. This excess is being used to develop new markets in Europe by reducing the price. In Dublin some supplies of cocaine are believed to be available at £100 per gramme. Figures from the Gardai and from the Drug Clinic indicate that the abuse of cocaine has not yet become a significant problem in Ireland.

Short-Term Effects.

Street cocaine is usually 'cut' or diluted with lactose (milk sugar) or with legal local anaesthetics such as procaine and lignocaine. The powder can be inhaled into the nostrils by snorting through a straw, after 20-25 mgs has been laid out in narrow lines on a mirror. Because the material is bought on the black market, it is impossible to know exactly how much cocaine (if any) is being taken. Even experienced cocaine users are unable to distinguish the effects of cocaine from lignocaine, a medically used local anaesthetic.

The effects of intranasal cocaine start very rapidly (3

minutes) and last for only about twenty minutes. They include stimulation, reduction in hunger and thirst, and a superhuman feeling of great energy and alertness. Many users report an almost orgasmic-like intensity of effects. However, the pleasurable effects of low doses are replaced by disturbing effects when high doses are taken or when a person doses repeatedly to maintain the short-lived effects. Large doses can cause anxiety, depression and fainting. Occasionally a binge or 'run' of cocaine over a period of days can result in bizarre, aggressive and violent behaviour, with severe persecution complexes. Excessive doses can cause death through heart failure or lung damage. While fatalities have been reported with intranasal use, they are most likely to occur when the drug is smoked or injected, or as a result of what has become known as the 'body packer syndrome', where attempts are made to smuggle cocaine packed in condoms and subsequently swallowed. If the condom bursts or stomach juices leach the cocaine out, a lethal dose can be absorbed into the blood stream. In a number of such cases the packages, which are also often inserted into the rectum, have had to be removed surgically.

Long-Term Effects and Hazards.

Cocaine is not addictive in the usual sense of the word because there do not appear to be any physical withdrawal symptoms. Cocaine is described as producing severe psychological dependence because of the strong compulsion and craving to continue use. Cocaine is known to have the most reinforcing effect of any known drug. Test monkeys with unlimited access to the drug will self-administer it until they die of exhaustion, ignoring food, female company and even electric shocks. Humans also have difficulty in

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limiting use. One cocaine hotline set up to counsel the 4.2 million regular users in America, reported that of 450,000 calls in 18 months, 83% of callers reported addictive patterns of use with 90% reporting adverse physical or psychological consequences.

Crack and Free-Base: Smoking of what is called 'free-base' cocaine, where the salt form is chemically converted into cocaine base and smoked in special pipes, is a method of use which produces a shorter but more intense high than 'snorting' the drug. It involves a much higher risk of dependency and toxicity, because of the higher doses (100 mgs of free base per 'hit') and the shorter onset of action (7 seconds) compared to inhalation (15-20 seconds,) leading to almost continual consumption in binges which can last for up to four days. Cocaine smoking first became popular in Peru where coca paste containing between 40 and 90% cocaine is readily available. The smoking of coca paste has become epidemic in Latin America. 'Crack' is a cheap high-strength form of cocaine base made by mixing cocaine salt with bread soda, which has attracted enormous attention in recent years. Crack (so-called because of the noise when a lump or 'rock' is heated) is not a new drug but rather a new way of delivering the drug. Because it is the base, it is volatile and can be smoked in cigarettes or in glass pipes. Crack has exacerbated the problem of cocaine because of its low cost, ready availability, high doses (up to 300mgs of cocaine) and speed of action which is comparable to that obtained by intravenous injection. Higher blood levels are obtained giving a euphoria which seems to be more intense than that obtained by 'snorting'. This euphoria is also of shorter duration requiring larger quantities of drug with greater frequency to maintain a drugged state. This makes

free-base and crack smoking highly addictive and more smokers of cocaine report dependency problems than intranasal users, but intranasal cocaine dependence also appears to be an increasing problem where cocaine is freely available.

Crack and free-base are also much more likely to cause fatalities in young, otherwise healthy people, as a result of strokes, heart attacks, clots, damage to the heart muscle or to the lungs. Women are reported to be the heaviest users of crack and it has been reported that many engage in sexual activity with multiple partners while using the drug, thereby increasing the risk of sexually transmitted diseases, HIV infections and also unwanted pregnancies. American studies show that almost one in five pregnant women have used cocaine during pregnancy. Cocaine use during pregnancy puts the baby at risk due to rupture of the womb caused by a sudden rise in blood pressure. Other problems are caused by a lack of oxygen, by premature birth, as well as a low birth weight and smaller size. Increasingly babies born to cocaine users are showing abnormalities of the heart, kidneys and the bowel.

After discontinuing regular use of any form of cocaine, the user will feel tired and experience a severe depression - the 'crash' - which, together with excessive eating and sleeping, is now believed to be a symptom of withdrawal from the drug. Many cocaine users become so depressed that suicide attempts are very common. In one rehabilitation programme in the U.S., it was reported that 26% of crack users had attempted suicide compared to 6% of non-cocaine users, and that women were three times more likely than men to do so. Many cocaine users try to counteract this 'crash' by using tranquillisers,

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alcohol or heroin/cocaine mixtures called a 'speed ball'. With chronic frequent use, increasingly unpleasant effects develop, where the excitement is replaced by restlessness, insomnia, weight loss, developing into a paranoid psychosis with delusions of persecution, violent tendencies, visual disturbances called 'snow lights' and unpleasant skin sensations - the 'cocaine bugs', where there is the feeling of insects crawling under the skin. These effects generally clear up once use is discontinued.

Because cocaine constricts blood vessels, chronic use could lead to damage to the membranes and lining of the nose. In direct contrast to the harmful consequences of cocaine use, there is little evidence of any physical or psychological harm from coca chewing, possibly because less cocaine is absorbed and because it is released more slowly into the blood stream.

The name, LSD, as well as its slang term "acid" is taken from the chemical name, Lysergic Acid Diethylamide. This drug is classed as an hallucinogen, meaning that it causes a "trip" involving changes in the perception of time and space which results in unreal sensations, the appearance of visions, the hearing of voices and delusions. It is an extremely potent drug and the minute amounts required for a "trip" can be formed into small tablets (microdots), absorbed onto blotting paper, or peel-off black stars or cartoon figures. The strength of these preparations is unpredictable and often materials sold as LSD do not contain any LSD at all.

LSD is synthesised from medicines from Ergot, a fungus which grows on rye and wild grasses. Ergotism or "St. Anthony's Fire" a disease involving hallucinations, gangrene and death, occurs when flour contaminated with ergot is eaten and outbreaks have occurred sporadically throughout history. Some of the symptoms of ergotism resemble those of an LSD trip. LSD was first synthesised in 1938 in Switzerland, but its hallucinogenic effects were only discovered by accident in 1943. The drug was used at one time in experimental psychiatry, but at present such use is almost non-existent. Nearly all LSD is now prepared by illegal synthesis in back-street laboratories.

In the early 1960's in America and later in the rest of the world, LSD was publicised for non-medical purposes and became the chemical cornerstone of the "Flower Power" hippy movement, where it was used to precipitate semi-religious mystical experiences. More recently it has been popularly associated with so-called "Acid-House" music.

LSD is a semi-synthetic product, but ritual use of the seeds of the Morning Glory plant which contain chemicals closely related to LSD, was a part of the religious observances of the Aztecs of Central America. Indeed, many plants containing hallucinogens have been used for centuries for religious purposes by primitive cultures mainly on the American Continent. Many of these drug rituals survive to the present day, including the use of the Peyote cactus which contains mescaline (chemically similar to the amphetamines), and the Magic Mushrooms containing psilocybin.

Modern chemistry has produced a range of synthetic hallucinogens in addition to LSD. These include MDA, DMT, and PCP (phencyclidine) or 'angel dust', once used as an anaesthetic, but which now has a bad reputation for releasing violent behaviour or causing prolonged coma. It is usually sold as one of the more exotic hallucinogens, such as synthetic THC, mescaline or psilocybin. It is not widely used (if at all) in Ireland. The name Angel Dust has more recently been used for a different drug, clenbuterol, which is illegally used as a growth promoter in cattle. Clenbuterol does not cause hallucinations.

Legal Status.

LSD and other hallucinogens such as DMT, mescaline, psilocybin etc. are controlled in Schedule 1 of the *Misuse of Drugs Act* which prohibits medical and non-medical use. This means that they can only be supplied or possessed for research or analysis by a person holding a licence from the Minister for Health. It is an offence to produce, supply or possess these drugs. It is also an offence to allow premises to be used for the production or supply of these drugs.

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LSD

Prevalence and Availability.

It is very difficult to establish how many people in Ireland use or experiment with LSD. A survey of University students in Cork reported that 3% had tried LSD. A similar percentage was reported in a survey of schoolchildren in the Dublin area. It is generally believed that the popularity of LSD declined from the mid-1970's on and this is supported by the fact that seizures of the drug, prosecutions for possession and reported use by Drug Clinic patients all show reductions in recent years. The price of a single dose of LSD ranges from £5-£10.

Short-Term Effects.

An LSD trip begins about an hour after swallowing the drug. It peaks 2-3 hours later and the effects usually wear off after 12-15 hours. The effects are difficult to predict because they depend on the experience and expectations of the user and where the drug is taken. The physical effects are less important than the mental and emotional effects and include increased heart rate and blood pressure, widening of the pupils and a rise in temperature. Users generally report changes in body images, distorted shapes and sizes and intensified colours. Distortions of hearing occur, as do changes in sense of time (slowed down) and of place. Psychological tasks such as learning, remembering and concentration are impaired.

Emotional reactions vary, but include heightened self-awareness, mystical experiences and insight into childhood memories. These mood changes may be extremely pleasant or extremely frightening (a bad "trip"). A person may have good or bad experiences

on different occasions and even during the same trip.

Long-Term Effects and Hazards.

It is believed that the ratio of unpleasant, frightening experiences to pleasant effects is high. Unpleasant reactions are likely if the user is mentally unstable, anxious or depressed, and can include anxiety, fear, depersonalisation (feelings of floating outside one's body), depression, disorientation and panic. Serious panic and anxiety, or even psychotic reactions can occur, but can be dealt with by reassurance. Occasionally tranquillisers may be required.

Prolonged mental ill-health may be triggered off by an LSD trip. Good trips are also not without risk, with people being injured because of delusions about being able to fly or walk on water. Fatal accidents and suicides have been caused by LSD, but the exact extent of these is unknown. Fatalities due to overdosage are non-existent. No physical dependence occurs, but tolerance develops which may tend to reduce frequent use. "Flashbacks" (short vivid re-experiences of a previous trip) can occur weeks or even months after the initial trip. These can cause disorientation, anxiety and distress and can be dangerous, in certain circumstances if one is driving, operating machinery, working at heights etc.

MAGIC MUSHROOMS

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The use of mushrooms and other plants for their vision-inducing (hallucinogenic) effects dates back, according to archaeological evidence to about 500 BC in Central America. The Aztecs of Central Mexico consumed sacred mushrooms called Teonanacatl (divine flesh). The mushroom-induced visions and voices were their way of communing with the spirit world. When the Spanish conquered Mexico in the 16th century they tried to eliminate the practice, but the cult has survived to the present day. The main mushroom used in Mexico is *Psilocybe mexicana* which contains the drugs psilocybin and psilocin. Numerous other species of mushroom which grow in North America and Europe also contain these chemicals which are related to LSD.

Psilocybin-containing mushrooms do not feature in European history, although witchcraft is believed to have involved hallucinogens from the potato family such as deadly nightshade. The use of mushrooms for 'recreational' drug use has increased gradually since the mid-1960's as a more 'organic' alternative to LSD. At present a number of different types of mushroom are known to produce psilocybin. These are chiefly from the *Panaeolus* and *Psilocybe* families, especially *Psilocybe semilanceata*, the liberty cap. Fly agaric, an unrelated mushroom, was used by the ritual medicine men or "Shamans" of North East Asia and Siberia. In this case the chemical responsible is probably muscimole.

Legal Status.

Psilocybin and psilocin are controlled by the *Misuse of Drugs Act*. Because they are recognised as having no use in medicine, they are included in Schedule 1, which prohibits the possession, production, supply

and the act of allowing premises to be used for their production or supply by anyone (including doctors) except in accordance with a licence issued by the Minister for Health for research or other special purposes. There are no legal restrictions on harvesting, preparation and use of fly agaric.

Prevalence and Availability.

There is no way of knowing exactly how many people use, or have used, magic mushrooms as they are called. A survey of school children in the Dublin area indicated that 4% had taken them. Relatively small seizures of the drug have been made in recent years. As a result, there have been few prosecutions. In addition, there has been a reduction in the number of Drug Clinic patients reporting use of the drug. Most of the mushrooms are collected from the wild, but botanical records are sketchy on the exact species which grow here. It is believed that it is the liberty cap which is the most commonly used. It also has the highest content of psilocybin.

Short Term Effects.

Psilocybin mushrooms may be eaten raw, cooked, or brewed into a tea. They may also be preserved by drying. The amount of psilocybin varies with the species, location, maturity and size. Therefore, dosages are variable, not least because varying amounts of mushrooms (8-300) are taken. Thus, while it is believed that 20-30 mushrooms seems to be the usual dose, the actual amount of psilocybin taken is unknown and the effects therefore difficult to predict.

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MAGIC MUSHROOMS

The effects of psilocybin-containing mushrooms are similar to a mild LSD experience. The experience therefore is variable and dependent on the user's mood, environment and intentions. The experience is not as unpleasant as the LSD trip. The effects include euphoria and hilarity, together with dilated pupils, increased pulse rate and high blood pressure. The effects come on quicker (generally after about 1/2 hour) and start to wear off after about 4 hours, compared to 15 hours for a dose of LSD. The hallucinations are usually visual in nature (often in colour), but auditory hallucinations can also occur. There are reports of people having the sensation of objects changing shape and heightened awareness of sound and colour.

Users commonly report nausea, vomiting and abdominal pain, but it is possible that non-psilocybin poisonous mushrooms may have been taken as well as liberty caps.

Hazards and Long-Term Effects.

A number of users in Britain reported bad "trips" involving feelings of depersonalisation, panic, anxiety and even psychotic reactions. Some users were aggressive and hyperactive, with many of those requiring medical attention reporting their experiences as frightening, and including tingling of the limbs and flushing. Such bad trips can be dealt with by friendly reassurance and generally wear off after about 12 hours with no lasting effects. Some users do have recurrent panic and anxiety attacks often triggered off by alcohol. A number of users indulged in rash behaviour, such as running in and out of traffic, wandering naked along a railway line, or trying to walk between 'tube' stations. In the latter

case a 16 year old boy was killed when struck by a train.

Psilocybin mushrooms are not poisonous, but there is the ever present possibility of picking poisonous mushrooms by mistake and a number of fatalities have been reported from other countries. Distinguishing hallucinogenic mushrooms from poisonous, often deadly relations is a complicated task, requiring reference to relevant botanical texts and some expertise in the classification of mushrooms, and it is not a task to be performed while hallucinating.

As in the case of LSD, tolerance rapidly develops and it may take twice as many mushrooms to repeat the experience. Cross tolerance occurs between LSD and psilocybin. There are no significant withdrawal symptoms and no physical dependence, although some people may be psychologically dependent.

Little is known about the long-term effects of extended, frequent use.

SEDATIVES AND MINOR TRANQUILLISERS

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Sedatives are used medically to calm people down and to help them sleep at night. The most important of the sedative drugs are the barbiturates such as Seconal® and Amytal®. Because they have side effects and because quite small amounts can result in an overdose, they have been largely superseded by the minor tranquillisers. However, one barbiturate, phenobarbitone, is still widely used in the prevention of epilepsy.

Tranquillisers fall into two main groups - major tranquillisers, e.g. chlorpromazine [Largactil®] are used for serious mental illnesses - while minor tranquillisers are used to control anxiety and stress and at night to induce sleep. Minor tranquillisers are the most frequently prescribed, especially the benzodiazepine type which can be divided into the *Anxiolytics* (anti-anxiety drugs), e.g. Valium®, Ativan® and Librium®, and the *Hypnotics* (sleep-inducing agents) e.g. Dalmane®, Mogodon®, Halcion®. This division is not absolute because many of the anxiolytics can also act as hypnotics. Sometimes the benzodiazepines are classified as short acting, e.g. Triazolam (Halcion®), Temazepam (Normison®) and Lorazepam (Ativan®) or as long acting e.g. Flurazepam (Dalmane®) Nitrazepam (Mogodon®) and Diazepam (Valium®). The benzodiazepines are used to help people cope with the distress caused by insomnia, anxiety, panic, epilepsy, muscle spasms and pre-surgical stress. Both the barbiturates and the tranquillisers are usually taken by mouth but some people may inject either dissolved barbiturates or the liquid form of certain benzodiazepines.

Legal Status.

All of the tranquillisers and barbiturates are prescription-only under the Control of Sale Regulations and as such can only be sold by a pharmacist, in accordance with a doctor's prescription. They are also controlled under the Misuse of Drugs Acts. Therefore it is now illegal to possess them without a prescription or to sell them or to give them to someone else.

Flunitrazepam, (Rohypnol ®) and Tenazepam (Eupypenos ®, Normison ®, Tenox ®) are recognised as being especially liable to abuse, particularly by opiate users and as a result have been subjected to much stricter controls on prescribing and possession.

Prevalence and Availability.

The use of barbiturates has declined in medicine. While no exact figures are available, it is known that the prescribing of these drugs almost halved in the five years to 1978 and there is every reason to believe that the decline has continued. While 52 people were charged with the possession of barbiturates in 1981, there have been no such prosecutions since 1985. Only 12 patients attending the Drug Treatment Centre Board in 1989 reported using barbiturates.

There have been no national surveys or statistics concerning the overall usage of tranquillisers in Ireland. It is estimated that more than one and a half million prescriptions for this type of drug are written each year. A study by Henman and his colleagues at the School of Pharmacy used the internationally recognised Defined

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Daily Doses (DDD per 1,000 patients per day) as a basis for comparing prescription trends. In 1973 the total benzodiazepine consumption in Ireland among General Medical Service (G.M.S.) patients was 50 DDD. This figure reached a peak in 1981 at 83 DDD before dropping to 69 DDD in 1983. In 1987 the level of use among the total population of the tranquilliser benzodiazepines was 21.5 DDD/1000 patients/day, while that of the sedative/hypnotic group was 19.8 DDD/100 patients/day. G.M.S. patients had a much higher use rate at 36 DDD and 35 DDD respectively. There was a discernible fall in the use of tranquillisers and an increase in hypnotic use. Between 1977 and 1987 in the G.M.S. the quantity of diazepam (Valium ®) fell by 16.4% while that of lorazepam (Ativan ®) fell by 14.8%. among the hypnotics and sedatives the quantity of Nitrazepam (Mogodon ®) fell by 8% but flurazepam (Dalmane ®) remained almost unchanged. Prescribing in the G.M.S. is higher by a factor of two or three than in the non-G.M.S. population. Estimates of the prescribed daily doses show that they tend to be lower than the appropriate DDD and that a higher proportion of women than men use benzodiazepines in Ireland. In other countries use by women is about double that by men. A survey of prescriptions for these drugs in a Dublin pharmacy showed that three times more anti-anxiety drugs than hypnotics were used. Anxiolytics were used by all age groups whereas hypnotics were more likely to be used by older age groups. Worryingly, about two-thirds of all the patients using these drugs were using them for more than one year. Because there has been a lot of publicity surrounding the alleged over prescribing of these drugs, it is surprising to note that in some parts of Dublin these

drugs are available on the black market at a cost of £5 per 100 'Roche 10s', i.e. branded 10 mgs diazepam tablets. 'Street' use of these drugs may, it is suggested, be a way of smoothing out withdrawal from heroin or of coping with the intense high and resulting depression from cocaine abuse. An increasing number of patients attending the Drug Treatment Centre Board report tranquilliser use and many present for treatment for dependence on this particular group alone.

Short-term Effects.

Barbiturates depress the central nervous system in the same way as alcohol. Small doses may make people feel relaxed and sociable as if they had taken one of two drinks. With larger doses the sedative effects predominate. A person, having taken a moderate to large dose, will often be unsteady, with poor control of speech and body, rendering them liable to injury. They may appear to be drunk without any smell off their breath. Some may become aggressive, as can happen with alcohol. The effects last from 3 to 12 hours depending on the dose. Large doses can cause unconsciousness and eventually respiratory failure and death. The fatal dose is very near the medical dose and overdose deaths, particularly when alcohol is drunk at the same time, have always been a major medical problem.

Tranquillisers depress mental activity, making people less alert, but the usual dose does not make people as sleepy or impair intellectual functioning as much as the barbiturates. The most commonly reported side effects are drowsiness, forgetfulness and a decrease in

SEDATIVES AND MINOR TRANQUILLISERS

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the ability to carry out complicated tasks such as driving because of the sedation, impaired memory and reduced coordination. The benzodiazepines are known to disturb control of steering and reaction time in both laboratory and road tests. In addition, the amnesia produced can cause some drivers to forget routes and impair their ability to read maps. It has been suggested that medical doses may double the risk of a traffic accident. If these drugs are taken with alcohol the damaging effect on coordination and performance will be even greater because the combination of the two drugs will magnify the effects of each drug. Another problem is the possibility of a hangover effect following a hypnotic (sleep inducing) dose the previous night. The damaging effects tend to disappear after a few days when short-acting drugs are taken, but continue for longer when a drug such as nitrazepam is used. This is due to the development of tolerance. Patients should be advised to avoid all those activities which require concentration and coordination, e.g. driving, use of machinery, use of complex automated systems in the chemical, power and other industries, air traffic control systems etc., during the first few days of treatment.

Any of the benzodiazepines in a high enough dose can induce sleep. Some long-acting types such as Mogadon® and Dalmane®, can have effects lasting into the following day, whereas some shorter-acting types have effects which last from 3 to 6 hours. Use of benzodiazepines may cause confusion and disinhibition in some users leading to a loss of self control, recklessness and even violence. Falls and fractures are a hazard due to poor coordination. One U.S. Study

indicated that benzodiazepine users use more health-care services as a consequence of accidents and injuries than patients who do not use these agents.

The benzodiazepines are safe in the sense that lethal doses are very large. Single large doses of these drugs have been taken on their own with little or no long-term consequences. However, if they are combined with alcohol, then a fatal dose is reached at a much lower level.

Long-term Effects and Hazards.

Regular use of barbiturates is likely to lead to tolerance and to dependence. While more drug has to be taken to get intoxicated, the amount needed to cause respiratory failure and death does not increase. Strong physical and psychological dependence occurs and the withdrawal symptoms can include irritability, nervousness, insomnia, nausea, twitching and sometimes convulsions, which can be fatal. Heavy users are also prone to pneumonia (because they are unable to cough normally) and to hypothermia (because these drugs block normal responses to cold). All of these hazards are increased if the drug is injected, when all of the problems associated with needles and syringes can also occur.

With benzodiazepines withdrawal symptoms can occur following therapeutic doses given even for short periods of time, e.g. 4-6 weeks of continuous use. These effects usually appear shortly after stopping one of the short-acting types or up to several days after stopping a long-acting drug. There is no evidence available to suggest that any one drug is more respon-

SEDATIVES AND MINOR TRANQUILLISERS

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sible for the development of dependency than another. Dependence is more likely to occur in the elderly whose metabolism is reduced and where there is dependence on other drugs especially alcohol.

Tolerance develops to the effects of these drugs and may increase the risk of dependence because of the need to increase the dose. Benzodiazepines are thought to lose their ability to induce sleep after a fortnights continuous use and may be ineffective against anxiety after four months. If drug use is suddenly stopped, withdrawal symptoms such as tremor, sweating, headaches, sensitivity to light, sound and touch, insomnia, nausea, vomiting, anxiety, depression, muscle spasms, vertigo and a feeling of continuous movement appear several hours after a short-acting drug. Serious withdrawal effects include psychotic reactions such as hallucinations, depersonalisation and paranoid delusions as well as convulsions. These are not life-threatening as with the barbiturates, but may be unpredictable in their onset and may last from 2 weeks to a year. In some cases the withdrawal symptoms may resemble the original pre-treatment complaint (e.g. rebound insomnia) and there may be a temptation to continue the treatment. However, many doctors feel that patients should be withdrawn from tranquillisers as soon as possible by gradually reducing the dose, rather than abruptly stopping it altogether. It is now recommended that these drugs should only be used to treat severe disabling anxiety and insomnia using the lowest possible doses and for the shortest possible time which should not exceed 4 weeks. When a benzodiazepine is used to induce sleep its use should be intermittent e.g. every third or fourth day over a cou-

ple of weeks.

Benzodiazepines may precipitate suicide in depressed patients. In cases of bereavement, psychological adjustment may be inhibited. There is evidence that memory is impaired but this usually relates to the period after the drug is taken (which is why it is used pre-operatively and in dentistry). While some residual amnesia may occur and some chronic users have lower scores in some psychological tests, it is not yet known for certain whether long-term use impairs intelligence.

HEROIN AND OTHER OPIATES

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Heroin and other opiates are a group of strong sleep-inducing painkillers (narcotic analgesics) originally extracted from opium, the dried milky latex from the fruit of the opium poppy. Opium contains morphine and codeine, both very effective painkillers. Heroin is easily manufactured from morphine in even the crudest of laboratories. Freshly made heroin is a white odourless powder but as it gets older it darkens in colour and develops a smell of acetic acid (vinegar). Heroin often contains other drugs, either produced during manufacture because of a fault in the process, or added deliberately to make a particular grade of heroin, e.g. some types of Far Eastern heroin made for smoking contain strychnine. Heroin was originally developed as a safer substitute for morphine, whose medical uses as a painkiller are limited by its dependence-producing potential. Unfortunately heroin proved to be nearly four times more potent and more addictive than morphine. Both drugs are still used in medicine to treat the severe pain of terminal cancer and of heart attacks. Heroin for medical use is not available in Ireland though there is nothing in the *Misuse of Drugs Acts* that prohibits the prescribing of heroin. This is because, in an effort to reduce the availability of heroin, licences are not issued which would allow the drug to be imported into the country.

Codeine is widely used for less severe pain, often in combination with aspirin and paracetamol. It is also used in cough 'bottles' because it suppresses coughing. Increasing concern has been expressed about the abuse of cough mixtures by young people. It is not certain which of the components in these preparations gives the sought-after euphoria. It could be the codeine which has been known to cause dependence, it could be the antihistamine which

causes drowsiness, or it could be the combination of effects. A number of manufacturers have removed codeine from their formulas as a way of helping to reduce the abuse potential of these medicines. Some synthetic opiates are also used to suppress coughs and in antidiarrhoea preparations. Extracts of opium are also included in various antidiarrhoea preparations.

A number of synthetic opiates have been developed as painkillers. These include pethidine often used in childbirth and which was widely abused in the initial stages of the development of the drug scene in Dublin in 1968-69; Dipipanone is another such drug developed to treat severe pain and sold as Diconal® tablets. Ireland has the dubious distinction of being the first country in the world to report cases of Diconal® abuse. Methadone (Physeptone® linctus) is an opiate usually used to wean heroin addicts from their heroin by replacing it with an equal dose of methadone which blocks the withdrawal symptoms. The methadone dose is then gradually reduced until the patient is drug-free. Methadone can also be used in treatment where addicts are maintained on a dose of the drug which prevents withdrawal and the need for the drug user to resort to crime or prostitution to pay for their illegal heroin.

Two newer synthetic opiates are dihydrocodeine [DF 118®] and buprenorphine [Temgesic®]. Dihydrocodeine, used medically to treat moderate to severe pain is chemically related to codeine and it too can give rise to dependence of the morphine type. Buprenorphine has typical morphine-like effects but a longer duration of action. It also blocks some of the effects of morphine and as a result it may cause withdrawal symptoms in some individuals who are taking other opiates. Some

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studies have shown that buprenorphine reduced self-administration of heroin by addicts and as such could be used as a "maintenance" drug in addiction treatment.

Opiates can be swallowed or dissolved in water and injected, heroin can be sniffed up the nose like cocaine or smoked ("Chasing the Dragon"). As with other drugs, injection into a vein maximises the effects and dangers.

Legal Status.

Opiates are controlled by the *Misuse of Drugs Acts*. It is illegal to possess them, unless prescribed by a doctor and supplied by a pharmacist. It is an offence to import, distribute, produce or sell them. The penalties for unauthorised possession, according to the *Misuse of Drugs Act 1984*, are a fine of up to £1,000 and/or 12 months imprisonment if the case is heard in the District Court. If a person is found guilty by a jury the penalty can be a fine, the amount of which is at the discretion of the Court, or 7 years in jail, or both jail and a fine. The penalties for illegal supply can be more severe - in the case of a jury trial, a convicted person could be sentenced to life imprisonment, or to a lesser period of imprisonment, or to a lesser period in jail and a fine the amount of which is unlimited and at the discretion of the Court. A fine of up to £1,000 and/or 12 months in jail can be imposed by the District Court.

It is an offence to smoke opium (the only prohibition on actual use of a drug in the *Misuse of Drugs Act*), to possess utensils for smoking or preparing opium, to allow premises to be used for preparing or smoking opium, and to cultivate the opium poppy.

All doctors may prescribe most opiate drugs for medical use although heroin is no longer available. The other exception is Diconal® whose use is now restricted to hospitals only. Dihydrocodeine in the form of DF 118® tablets are no longer exempt from the strict requirements of the *Misuse of Drugs Act* and buprenorphine is now also a controlled drug. Certain non-injectable mixtures of codeine with other drugs, as well as very dilute opiate mixtures for cough or diarrhoea, are exempt from most of the restrictions of the *Misuse of Drugs Acts* but can only be purchased from a pharmacist.

Because of concern over the abuse of certain cough mixtures, the Pharmaceutical Society of Ireland has issued strict guidelines to all pharmacists in an effort to reduce the availability of these products to young people.

Prevalence and Availability.

Because heroin use is illegal, there is no accurate method of determining the true number of dependants. All the indicators available show that between 1980 and 1983, heroin availability, use and addiction increased rapidly, particularly in Dublin. The number of heroin users is believed to have reached a peak in 1983 and has remained steady since then. In 1983 over 1,000 of the 1,515 patients attending the Drug Clinic were using heroin; in more recent years, however, most dependants have been using the synthetic opiates especially buprenorphine, methadone and dipipanone. In particular, morphine sulphate tablets, popularly known as "Napp's" or "MST's", have become widely available, even though the additives used in their manufacture make injection of the crushed tablets even more hazardous.

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Virtually all the heroin used is illegally manufactured and imported from the Middle East, Asia and increasingly from the so-called "Golden Crescent" of Afghanistan and Pakistan. Black market heroin can cost between £300 and £350 per gramme. At street level it is heavily diluted or 'cut' to increase its profitability using materials such as flour, lactose (milk sugar), talcum powder, glucose and caffeine. It is usually sold in £40 packs called 'quarters' and which contain 4 doses of drug. Morphine sulphate tablets vary in price on the black market depending on their strength; 100 mg tablets cost between £20 and £30 each, while the weaker 30 mg tablets cost between £6 and £15 each depending on where in Dublin they are bought. Temgesic® tablets cost between £5 and £6 per tablet while DF 118® are only £1. Physeptone Linctus costs £120 for a 500 ml bottle. Diconal® tablets are virtually unavailable due to the effectiveness of the prescribing restrictions and this is reflected in the dramatic fall in the numbers using the drug (from 182 in 1987 to 27 in 1989).

Short-term Effects and Hazards.

Moderate doses of pure opiates produce a range of physical effects, such as analgesia, suppression of coughing, depression of bowel activity leading to constipation, depression of respiration and dilation of blood vessels giving a feeling of warmth. At higher doses these drugs induce sleep, followed by coma. Death from respiratory depression can occur, especially if the opiate is combined with other depressant drugs such as alcohol and barbiturates, if there is a loss of tolerance, or unexpectedly high potency and is more likely to happen when the drug is injected. Heroin when injected produces a very rapid 'rush' lasting less than a minute, and involving

warm flushing of the skin and sexual excitement. There is a mistaken impression that heroin gives a more intense feeling of pleasure than other opiates, but it seems that this reputation is due more to the rapid onset of action compared with the slower action of morphine (into which heroin is rapidly changed in the body). The initial rush is followed by a pleasant, dreamlike state of peacefulness and contentment, pain is reduced, as are aggressive tendencies and sexual drives. Much of the euphoria seems to occur early in the dependants career, and those truly addicted experience little euphoria.

The first experience with heroin is often unpleasant because of nausea and vomiting. This feeling is often sufficient to deter many people from using heroin again. Others continue to use the drug, becoming occasional users. Others become regular users and others become compulsive users. There is evidence that repeated use of heroin does not invariably lead to compulsive daily use. The side effects of opiates include reduced sex drive, constipation, palpitations, rashes and itching, especially of the nose.

Long-term Effects and Hazards.

Tolerance develops rapidly to the effects of opiates. Heroin dependants are able to take amounts which would kill a non-tolerant person. Some U.S. soldiers in Vietnam were reported as using 2.5 gms of pure heroin daily. It is likely that even the heaviest of heroin users in Dublin are using only a fraction of that amount each day. Tolerance disappears rapidly when use is stopped and overdoses are most likely to occur following this loss of tolerance by a user who has been detoxified in hospital or in prison. They then cannot use the high doses they formerly could tolerate.

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Dependence, both physical and psychological, though not inevitable, is a very frequent and likely result of continuous use of opiates, particularly if they are injected. The length of time taken for dependence to develop is affected by the physical and mental make-up of the individual, and by the quantity and frequency of drug consumed. Dependence can occur after a few days. More serious dependence can take weeks or months to develop. Withdrawal symptoms, called 'cold turkey' because of the chills and gooseflesh which are part of withdrawal, begin 4-12 hours after the last dose of the drug. They reach a peak after one and a half to three days and then subside. The seriousness of the symptoms depends on the mental state of the dependant and on the extent of drug use. It is likely that most dependants using weak adulterated heroin do not have the full symptoms, and for many the effect would be similar to 'flu'. Withdrawal symptoms can include yawning, tears, running nose, sneezing, tremors, headache, sweating, anxiety, irritability, insomnia, spontaneous orgasm, loss of appetite, nausea, vomiting, diarrhoea, cramps and muscle spasms. It is relatively easy to detoxify an opiate dependant but relapse rates are quite high, partly due to the fact that some withdrawal effects last for months with strong feelings of discomfort and loss of well-being.

The high relapse rates after withdrawal effects have subsided also suggest that psychological dependence is more important than physical dependence in the compulsion to continue use. The belief that "once an addict always an addict" does not seem to be supported by studies of large number of American soldiers who were heavily dependent on heroin while in Vietnam. The studies indicated that contrary to

popular belief these soldiers were able to stop their heroin use and stay off it when they returned to the U.S.

Physical damage from long-term use of opiates is usually associated with unhygienic injection techniques rather than damage to organs in the body. There are no serious diseases attributable to chronic narcotic use that would parallel the damage to the liver and lungs caused by alcohol and tobacco. Studies of a small group of middle-aged addicts who were using pharmaceutical quality heroin for between 20 and 43 years revealed evidence of brain damage but the exact influence of heroin is as yet unclear. Because opiates suppress the coughing reflex, some chronic users may have lung problems including bronchitis. Some researchers have suggested that opiate dependants are abnormally susceptible to infections due to an effect on their immune systems.

The way a drug is used causes most medical problems, including blood poisoning and infection of the heart valves from using non-sterile water and syringes. Adulterants which do not dissolve can cause abscesses, clots in the lungs, gangrene and loss of limbs. Types of heroin which do not dissolve in water (e.g. South West Asian type 1 and Chinese no. 3) have caused problems when dependants have used lemon juice, vinegar or car battery acid in efforts to dissolve the drug. In Australia, France and Scotland fungal infections leading to blindness have resulted from the use of contaminated lemon juice. The use of the same needle and syringe by several people can result in the transmission of a very severe form of viral hepatitis which can cause liver cancer. Such hepatitis can also be passed on through contact with body excretions and by sexual contact. I.V. opiate

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abusers ("mainliners") are a high risk group for HIV infections which can result in the development of AIDS. The combination of disease, malnutrition and self-neglect through compulsive involvement with the drug and the risk of overdose creates a serious health risk to add to the social harm and legal problems associated with being a dependant

Designer Drugs.

These are chemicals in which the psychoactive properties of controlled drugs have been retained, but the chemical structure has been deliberately changed by "design" in order to avoid prosecution under existing drug laws. Illegally developed 'relatives' of such drugs as Fentanyl (Sublimaze®), Phencyclidine (PCP) and Pethidine are defined as 'designer drugs'. Alpha methylfentanyl (AMF) was the first such drug prepared from fentanyl which is a fast-acting powerful painkiller. AMF sold as 'China White' or synthetic heroin in the U.S., is reported to be 1,000 times more potent than morphine. Other fentanyl derivatives are even more potent with doses being measured in microgrammes rather than milligrammes. Reports from the U.S. suggest that these drugs are proliferating and represent a serious health hazard with over 100 overdose deaths believed to be due to fentanyl derivatives.

Another designer drug with devastating effects is MPPP derived from pethidine (a synthetic opiate) which, because of shoddy chemistry, contains an impurity called MPTP. When taken, MPTP can cause permanent Parkinson's disease by destroying neurotransmitters at the base of the brain. Symptoms include seizures, inability to speak, rigidity of the body and eventually total paralysis. The brain

damage caused appears to be irreversible although it may be possible to provide temporary relief of symptoms.

A number of derivatives of Angel Dust [phencyclidine] have appeared on the American black market. Drugs such as eticyclidine, rolicyclidine, tenocyclidine, have been controlled in Ireland since 1987, as have various fentanyl and pethidine derivatives. All these designer drugs are produced in illegal underground laboratories using "recipes" passed on through the grapevine. The increasing sophistication of the backstreet chemists represents a new danger to drug users. Because there is little or no control on the quality of the drugs, there is no way of preventing disasters such as the paralysis caused by MPPP or the overdoses caused by "super potent" derivatives of fentanyl.