ALCOHOL

Other common names Booze, drink (includes beer, wine, alcopops and spirits); also known as ethyl alcohol or ethanol
Drug category Central nervous system depressant; sedative

Habit-forming potential
It is difficult to measure the habit-forming potential of alcohol because individual responses vary so widely. There is certainly a behaviour called alcoholism that is characterized by a person's inability to control intake. Regular drinking and heavy drinking do not cause alcoholism but, like alcoholism itself, carry significant health risks. Alcoholism involves psychological and physical dependence, evidenced by large daily consumption, heavy weekend drinking, or periodic binges.

How taken
Orally, in the form of wines, beers and cider, and a wide range of spirits and liqueurs. Alcopops, the lemonade or fruit juice-based drinks, actually contain as much alcohol (5%) as beer or cider.

The alcohol content of drinks
Glasses vary in the amount they hold, so approximate volumes are quoted to help comparisons:

1 UNIT of alcohol = 1 glass of wine (125ml)
½ pint of alcopops (250ml)
½ pint of beer or cider (250ml)
¼ pint of super strong lager (125ml)
1 pub glass of port or sherry
1 single shot of whisky, gin, vodka or brandy

Sherry, port, and spirits taken at home usually contain larger amounts than pub measures.

Legitimate uses
The manufacture and sale of alcoholic drinks is closely regulated, both because it is a source of government revenue and to prevent the production of drinks containing methanol (methyl alcohol) – a toxin that can cause blindness. The sale of alcoholic beverages is restricted to those over the age of 18.

Medically, surgical spirit (concentrated alcohol that contains methanol, castor oil, methyl salicylate, and diethyl phthalate) is used as an antiseptic before injections to minimize the risk of infection. It is also used to harden the skin and thus prevent pressure sores in bedridden people, and foot sores in hikers and runners. Surgical spirit is extremely harmful if ingested.

Absorption of alcohol
Alcohol is rapidly absorbed from the stomach and particularly from the small intestine. Very strong drinks such as neat spirits are actually absorbed more slowly than weaker ones (as the alcohol reduces stomach movements that would push it into the intestine). Very dilute drinks are absorbed relatively slowly due to the large amount of water. In between these extremes, the stronger drinks will give higher blood levels; sherry and port are at about the "optimum" concentration. The presence of bubbles of carbon dioxide (in champagne, lemonade, and lager) may help to speed up absorption. So will mixing drinks; for example, drinking a glass of spirits as a chaser after a beer will produce a higher concentration that is absorbed more quickly.

Food in the stomach slows the rate of absorption of alcohol. Full cream milk, in which the fat is present in small droplets with a large surface area, seems particularly efficient for this purpose. Even the amount of carbohydrate in beer slows alcohol absorption a little, compared to a solution of alcohol in water at the same strength. Slowing the rate of absorption means that some of the alcohol can be broken down (metabolized, detoxified) before the rest is absorbed. This reduces the blood level and hence the effects of alcohol.

One unit of alcohol is the equivalent of about 15ml of pure alcohol, which is the amount that the average human adult male can break down in 1 hour. If you drink at a faster rate, your blood alcohol level will continue to rise; most people, for example, will exceed the legal limit (80mg of alcohol per 100ml of blood) after drinking only 2–3 units of alcohol in 1 hour. It takes as many hours for your body to rid itself of all the alcohol as the number of units you have drunk. For example, if you had five pints of beer (10 units) in a few hours, it will, on average, take around 10 hours to be removed from your blood. However, there is considerable variation in these figures. Women achieve higher blood levels than men after drinking the same amount (because women's bodies contain a lower percentage of water, into which the alcohol is distributed, and they break down alcohol significantly slower than men of the same weight). A large-framed adult will have a lower blood level of alcohol than a smaller person after they have had the same amount to drink.

Short-term effects
Alcohol acts as a central nervous system depressant, reducing anxiety, tension, and inhibitions. In moderate quantities, it creates a feeling of relaxation and confidence, and increases sociability and talkativeness, but does not improve mental performance. Moderate amounts also dilate small blood vessels, especially in the skin, leading to flushing and a feeling of warmth. Increasing amounts progressively impair concentration and judgement and reactions are increasingly slowed. Accidents, particularly driving accidents, are more likely. As blood alcohol levels rise, violent or aggressive behaviour is possible. Speech is slurred, and the person becomes unsteady, staggers, and may experience double vision and loss of balance. Nausea and vomiting are frequent; incontinence may occur. Loss of consciousness may follow if blood alcohol levels continue to rise, and there is a risk of death from choking on vomit or cessation of breathing. Blood alcohol levels of only 3–4 times the legal driving limit are thus potentially fatal.

In addition to alcohol's effects on the central nervous system, it has a number of other effects. The most noticeable to the drinker is its diuretic action. Beer drinkers will be particularly aware of this, but dehydration after drinking any kind of alcohol is responsible for much of the headache and other symptoms described as a "hangover" because the water removed comes from organs such as the brain. The best means of prevention is to drink less, or at least to drink a glass of water for each unit of alcohol, during the same time period.

Alcoholic drinks are not the same as "alcohol". They contain other chemical ingredients that might have side effects; for example, the juniper oil in gin is also diuretic. It is thought that many of the ingredients in drinks can add to the hangover experience, perhaps by delaying alcohol metabolism. Congeners – complex organic molecules such as polyphenols, higher alcohols, and histamine, which occur in varying amounts in different alcoholic drinks – may also have toxic effects.

Long-term effects and risks
Heavy drinkers risk developing liver diseases, such as alcoholic hepatitis, liver cancer, cirrhosis, or fatty liver (excess fat deposits that may lead to cirrhosis). High blood pressure, strokes, and heart failure may also result from heavy drinking. Inflammation of the stomach (gastritis) and peptic ulcers are more common in alcoholics, who also have a higher than average risk of developing a dementia-like illness.

Long-term heavy drinking is generally associated with physical dependence. An alcoholic may appear to be sober, even after heavy drinking, because of built-up tolerance. But a reverse tolerance effect is frequently seen in alcoholics, where relatively little alcohol can rapidly produce a state of intoxication. As well as health problems, alcohol dependence is associated with a range of personal and social problems. Alcoholics may suffer from anxiety and depression, and because they often eat poorly, they are at risk of various nutritional deficiency diseases, particularly deficiency of thiamine (see p.435).

Drinking during pregnancy can cause fetal abnormalities and poor physical and mental development in infants. Heavy drinking (6 or more units of alcohol a day) or binge drinking (more than 7.5 units of alcohol in a single session) is associated