

# Depressants

## EFFECTS OF DEPRESSANTS

Depressants are drugs which depress the central nervous system by interfering with the transmission of nerve impulses in the nerve cells (neurones). Depressants slow down the functions of the body including mental activity. In low doses they induce a feeling of calm and relieve anxiety and may induce sleep, but in larger doses they can cause loss of consciousness, coma, and death. The most commonly taken depressant is alcohol (ethanol). Rather confusingly depressants are sometimes described as anti-depressants, because they relieve the symptoms of mental depression.

## USE AND ABUSE OF ALCOHOL (ETHANOL)

Medically alcohol is used as an antiseptic before injections and is also used to harden the skin. Drinking large and regular amounts of alcohol can cause psychological and physical dependence, known as alcoholism. The social costs of road accidents, violent behaviour, and family breakdowns due to alcohol consumption are huge.

**Short term effects** In moderate quantities it gives the drinker a feeling of relaxation and confidence and increases sociability. It dilates small blood vessels leading to flushing and a feeling of warmth. With increasing amounts judgement and concentration become progressively impaired. Violent behaviour is possible. Speech becomes slurred and loss of balance occurs. Loss of consciousness may follow at high concentrations and there is a risk of death from inhalation of vomit or stoppage of breathing.

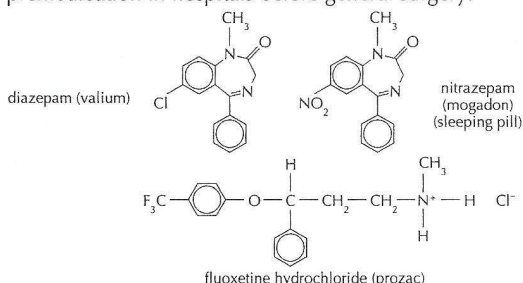
**Long term effects** Long term heavy drinking can lead to severe liver disease including cirrhosis and liver cancer. It is linked with coronary heart disease, high blood pressure, strokes and an increasing risk of dementia. During pregnancy it can cause miscarriage and lead to fetal abnormalities. Sudden discontinuation of alcohol by heavy users can lead to delirium tremens (the 'DTs'), which includes severe shaking that can last up to four days.

## SYNERGISTIC EFFECTS OF ALCOHOL

Ethanol can interact with, and considerably enhance the effect of other drugs because it depresses the central nervous system itself. This synergistic effect can be fatal, particularly when alcohol is taken together with benzodiazepines, narcotics, barbiturates, and solvents. With aspirin it increases the risk of stomach bleeding.

## OTHER DEPRESSANTS

Other depressants commonly prescribed to reduce anxiety and relieve stress or to help insomnia include the benzodiazepines and prozac. They do not however remove the causes and are usually only prescribed for a limited period while counselling or psychotherapy are put in place, as they can induce dependence. They are also used as a premedication in hospitals before general surgery.



## LEGAL LIMITS FOR DRIVING

In many countries the legal limit for driving is a blood alcohol concentration (BAC) of 80 mg of ethanol per 100 cm<sup>3</sup> of blood. In some countries it is even lower. After drinking, the concentration of alcohol in the blood increases for some time as the ethanol is absorbed, then it slowly decreases as it is metabolized and excreted. A unit of alcohol is roughly equal to:

- 280 cm<sup>3</sup> ( $\frac{1}{2}$  pint) of beer or lager
- a glass of wine
- a measure of spirits.

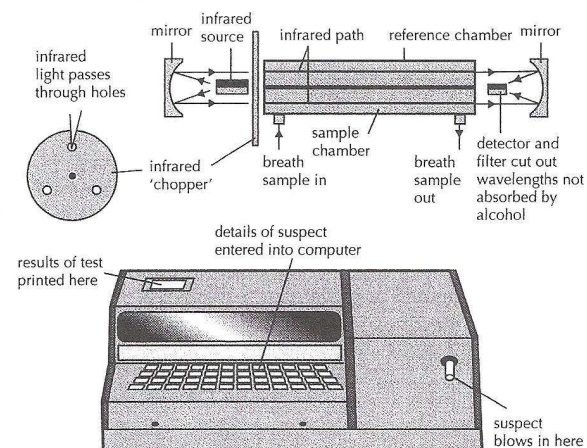
**Estimate of the alcohol consumption needed to exceed a legal limit of 80 mg of ethanol per 100 cm<sup>3</sup> of blood for a man of average weight (for a woman the quantities need to be reduced by about 30%)**

Number of units	Time taken drinking / hours
4.0	1
5.0	2
6.0	3
6.5	4
7.5	5

## DETECTION OF ALCOHOL IN BREATH, BLOOD, AND URINE

At the roadside a motorist may be asked to blow into a breathalyser. This may involve acidified potassium (or sodium) dichromate(VI) crystals turning green as they are reduced by the alcohol to Cr<sup>3+</sup>, or the use of a fuel cell where the ethanol is oxidized to produce electricity. None of these are accurate enough to be used in court. At the police station a blood or urine sample may be taken and sent to a forensic science laboratory for analysis using gas liquid chromatography.

### infrared intoximeter



Modern intoximeters can now be used in a police station to accurately measure the amount of alcohol in the breath. They are based on the principle that the C-H bonds in ethanol absorb infrared radiation of a particular wavelength -3.39 micrometres (μm). The suspect blows a sample of breath into a chamber. Infrared radiation from a heated source passes through a 'chopper' (a rotating slotted disc), which makes the beam then pass alternately through the sample chamber and a chamber containing no breath sample. The intensities of the two emerging beams are compared and the amount of radiation absorbed by the sample is then converted into micrograms of ethanol per 100 cm<sup>3</sup> of breath.