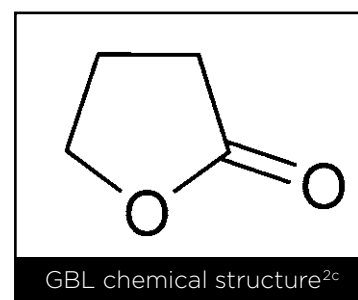




Background: GBL (gamma-butyrolactone) is a 'pro-drug' of GHB, which means that it converts to GHB within the body. GBL occurs naturally in certain food products, is found in small quantities in the human body and is available commercially as an industrial solvent and as an ingredient in cleaners, paint removers and engine degreasers¹. GHB is a drug which is available as sodium oxybate (or under the brand name Xyrem) as a treatment for narcolepsy in adult patients³ and has been used therapeutically in the treatment of

alcohol and opiate dependency^{1,2}. GHB was developed in the early 60s as a human anaesthetic^{2a}, but was discontinued due to unwanted side effects. It was used as a sleep aid and body building supplement in the 80s and later as a recreational psychoactive^{2b}. GHB and GBL are sometimes referred to as G, Liquid Ecstasy, Liquid X, Juice or Geebs.

Drug class: GBL is not active in its own right; its mechanism of action stems from its identity as a pro-drug of GHB. GHB is a central nervous system (CNS) depressant, with sedative and anaesthetic qualities.



Legal status: GHB was brought under the Misuse of Drugs Act as a Class C drug in 2003. As some users then switched to GBL and 1,4-BD as legal alternatives to GHB⁸, these were also brought under the control of the Misuse of Drugs Act as Class C drugs in 2009⁹. There are some exceptions to GBL's legal status that cover its legitimate (i.e. non-recreational) use²³.

Appearance and taste: At room temperature GBL is a colourless, slightly oily liquid that is clear to semi-opaque. It has a distinctive taste that some users have described as being distinctly chemical, like a solvent, nail varnish or paint stripper^{4, 5, 19}.

Route of administration: GBL is mainly taken orally. Due both to its unpleasant taste and to it being a skin irritant, most users dilute it with juice or other liquid. IV use is strongly advised against; one user reported that this led to "the most horrific pain you can think of... the tiny amount of GBL that was on the outside of the needle was enough to make me cry"⁶.

Dependence and withdrawal: Regular use of GBL builds tolerance, meaning users need to take more to feel the same effects. GBL is physically addictive and stopping it without medical supervision can be fatal; sudden withdrawal poses dangerous health risks and can require an in-patient detox.^{10,19} Clinical presentation of withdrawal may include anxiety, confusion, agitation, tremor, cramps, insomnia, aggression, delirium, delusions, paranoia with hallucinations, tachycardia (racing heart), low blood pressure and occasionally a schizophrenic-like state.^{2,10}

Typical effects and side effects:^{1, 7, 8, 9, 10, 15, 18, 27} These are some of the typical effects and side effects experienced by people who use GBL; not everyone will experience all effects listed and many can be dose dependent.

Physical		Mental	
Physical relaxation	Heightened sex drive	Euphoria	Loss of inhibitions
Can enhance effects of stimulant drugs	Increased erections	Increases dopamine levels	Can ease stimulant comedowns
Unconsciousness	Increased orgasms	Enhanced sociability	Sleep aid
Nausea and vomiting	Hypothermia	Anxiety	Aggression
Physical addiction	Severe respiratory depression	Paranoia	Confusion
Collapse	Death	Psychological addiction	Coma

Onset and duration of effects: Onset varies between individuals and can depend on a number of factors (including when the user last ate), but effects can be felt approximately 10-30 minutes after ingestion. 45 minutes to 1 hour later the effects begin to level off and decrease;^{26,28} depending on tolerance to the drug its effects can be felt for 2-4 hours.¹⁹ After-effects like grogginess and sleepiness can be felt for as little as two hours or as long as twelve hours after use, although some users find a sense of increased well-being the following day.²⁹

Overdose: GBL can be fatal. It is very easy to overdose on it, both because the strength can vary from bottle to bottle and because the doses involved are measured in such small quantities.¹² These risks are greatly increased by mixing GBL with alcohol or other sedative, depressant drugs or drugs such as ketamine. Mixing with alcohol is particularly dangerous as this can trigger instant collapse or an overdose reaction.^{2, 8, 10, 11, 13, 14, 15} GHB and GBL have been found to reduce the efficiency of some HIV medication and have also been implicated in sexual assaults or 'date rapes'.^{8, 15, 16, 17}

Dosage information: GBL has a very steep dose-response curve, meaning that it can only take a tiny amount to push the user from having a good time to experiencing accidental overdose, unconsciousness, coma or even death.¹⁰ Some rough guidelines follow, please note that these will not apply to everyone who takes the drug:

Low Dose	Medium Dose	Heavy Dose/Overdose
0.3-0.6mls	0.6-1.25mls	1.25-2mls+

Individual responses to the drug appear to vary greatly depending on a range of factors including body weight/size and gender²⁴ and it is highly recommended that users measure carefully and start with a smaller dose, for example 0.3mls to test their response to the drug. Once this 'starting point' dose has been found (for some users this might be between 0.3mls and 0.7mls) users can wait, and then re-dose at this same level until a 'sweet spot' is found.^{22, 25} Reports of re-dosing times vary from waiting between 30 minutes to 2 hours,^{18, 19, 20} and one user recommends sipping slowly over time to maintain the high.¹⁸ Some users choose to take a single larger amount (around 1.25-2mls) instead of smaller doses; taking a dose such as this could however push you into unconsciousness. Although everyone responds differently to GBL, having more than 2-2.5mls in your body at one time can put you at risk of overdose. If in doubt, **stop**.

GBL harm reduction information:

If you are experiencing any symptoms of withdrawal from GHB or GBL please seek medical advice before stopping.

- Avoid mixing with alcohol. Alcohol and GBL is a very dangerous combination; as is mixing GBL with any sedatives or depressants, or drugs such as ketamine.
- Always measure dosage carefully; never swig from a bottle. As there is very little way of working out how pure or how concentrated/diluted your GBL is, extreme caution should be used when measuring doses. For precise measuring, try using a 1 or 2ml syringe, or if using a pipette or eye dropper ensure that it is marked in millilitres.
- To be safe, wait for 2 hours before re-dosing.
- Do not assume that two different bottles of GBL are of the same strength.
- Do not assume that you should take the same amount as your friends, different people react very differently to GBL.
- Do not drive or operate machinery after taking GBL.
- Use a food colouring to differentiate it from other liquids.
- Avoid frequent use to prevent dependency developing.
- If you feel you are becoming addicted to GHB or GBL, please seek medical attention before stopping.

As unconsciousness is common try to make sure a friend is around who is not using the drug. If a user becomes unconscious but is still breathing call an ambulance then place them in the recovery position to prevent choking (see images below). Check that they are still breathing; if they wake up don't give them anything to eat or drink. If you leave them alone they may die. Stay until the ambulance arrives.

Recovery Position:

The recovery position is for someone who is unconscious but breathing normally. If they are not breathing normally CPR is required, with an emphasis on giving supplementary oxygen via rescue breaths.



Start by placing their arm as if they are waving.



Place the other arm across their chest and hold their hand against their cheek.



Lift up the knee that is furthest from you. Continue to hold their hand in place.



Turn them on their side by pulling the knee towards you and down.

For further information on Overdose & Emergencies see [UK and Ireland DrugWatch Information Sheet](#).

Where to get help: We would advise anyone experiencing issues from GBL, GHB or other substances to seek medical support via their GP or the NHS. There are a wide range of local drug services throughout the UK, to find out what is available in your area please use the links below:

England: [Find Support | Frank](#) Scotland: [Scottish Drug Services](#)
Wales: [Dan 24/7](#) Northern Ireland: [Public Health Agency](#) ROI: [Drugs.IE](#)

For further advice, medical professionals can use the National Poisons Information Service 24-hour telephone service on 0344 892 0111 or its online database, TOXBASE. Any health professional encountering an unusual or unexpected adverse reaction to the use of GBL (or any other drug) should report the reaction to [RIDR](#).

Written by [Mark Adley](#) in association with [UK and Ireland DrugWatch](#): an informal online professional information network established by a group of professionals working in the UK and Irish drugs sector. The aim of the group is to raise/establish standards for drug information, alerts and warnings. It is currently an unfunded, bottom-up initiative that works in the spirit of mutual co-operation. Details of current members can be found [here](#).

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