

**HB**

**163**

(7)

Date Referred to Committee: February 27, 1997

FURTHER REFERRALS:

Date of Committee Action: 4/25/97

The JUDICIARY Committee considered:

HB 163

HOUSE BILL NO. 163

GAMMA-HYDROXYBUTYRATE AS CONTROLLED SUBST

"An Act relating to designating gamma-Hydroxybutyrate as a schedule IVA controlled substance; and providing for an effective date."

recommends it be replaced with the following committee substitute \_\_\_\_\_ [ ] the same title [ ] a new title

[ ] additional referral to \_\_\_\_\_ Committee

[ ] attached amendment(s)

ADOPTS: \_\_\_\_\_ Letter of Intent

ATTACHES NEW FISCAL NOTE(s): (Dept)

APPROVES PREVIOUS: (Dept/Date)

[ ] fiscal note(s) \_\_\_\_\_

[ ] fiscal note(s) \_\_\_\_\_

[x] zero fiscal note(s) ADMIN (PUB. DEF.), PUB. SAFETY

[ ] zero fiscal note(s) \_\_\_\_\_

SIGNING WITH RECOMMENDATIONS	DP	DNP	NR	AM
<i>[Signature]</i> ROKEBERG	✓			
<i>[Signature]</i> JAMES	✓			
<i>[Signature]</i> BUNDE	✓			
<i>[Signature]</i> BERKOWITZ	✓			
<i>[Signature]</i> GREEN	✓			

CHAIR'S SIGNATURE *[Signature]*

1997 LEGISLATIVE SESSION

Revision Date: \_\_\_\_\_ Dept. Affected: Public Safety  
 Title: Gamma-Hydroxybutyrate as Controlled DPS Statewide Support  
 Substance: \_\_\_\_\_ Component: Commissioner's Office  
 Sponsor: Representative Vezey  
 Requestor: H. Judiciary COMPONENT SERIAL NO. 0523

EXPENDITURES/REVENUES: (Thousands of Dollars) (inflation not included)

OPERATING	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03
PERSONAL SERVICES						
TRAVEL						
CONTRACTUAL						
SUPPLIES						
EQUIPMENT						
LAND & STRUCTURES						
GRANTS, CLAIMS						
MISCELLANEOUS						
TOTAL OPERATING	-0-	-0-	-0-	-0-	-0-	-0-
CAPITAL EXPENDITURES	-0-	-0-	-0-	-0-	-0-	-0-
CHANGE IN REVENUES ( )	-0-	-0-	-0-	-0-	-0-	-0-
Code Revenue						

FUNDING: (Thousands of Dollars)

1002 Federal Receipts						
1003 GF Match						
1004 GF						
1005 GF/Program Receipts						
1005 GF/MHTIA						
Other						
TOTAL	-0-	-0-	-0-	-0-	-0-	-0-

Estimate of current year (FY 97) impact: \$ \_\_\_\_\_

POSITIONS:

FULL-TIME	0	0	0	0	0	0
PART-TIME	0	0	0	0	0	0
TEMPORARY	0	0	0	0	0	0

ANALYSIS: (Attach a separate page if necessary.)

No fiscal impact is anticipated to the Department of Public Safety

Prepared By: Sandy Perry-Provost, Special Assistant to the Commissioner Phone: 465-4322  
 Division: Commissioner's Office Date: 2/22/97  
 Approved by Commissioner: Ronald L. Otte Date: 4/20/97  
 Agency: Ronald L. Otte, Dept. of Public Safety

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# FISCAL NOTE

STATE OF ALASKA  
1997 LEGISLATIVE SESSION

BILL NO. HB 163

Revision Date: \_\_\_\_\_  
 Title: "An Act relating to designating gamma-Hydroxybutyrate as a schedule IVA controlled substance"  
 Sponsor: Representative Vezey  
 Requestor: (H) JUD

Department Affected: Administration  
 BRU: Public Defender Agency  
 Component: Public Defender Agency  
 COMPONENT SERIAL NO. 1631

**EXPENDITURES/REVENUES:** (Thousands of Dollars)

OPERATING EXPENDITURES	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03
PERSONAL SERVICES						
TRAVEL						
CONTRACTUAL						
SUPPLIES						
EQUIPMENT						
LAND & STRUCTURES						
GRANTS, CLAIMS						
MISCELLANEOUS						
<b>TOTAL OPERATING</b>	0.0	0.0	0.0	0.0	0.0	0.0

<b>CAPITAL EXPENDITURES</b>	0.0	0.0	0.0	0.0	0.0	0.0
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<b>CHANGE IN REVENUES ( )</b>	0.0	0.0	0.0	0.0	0.0	0.0
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**FUND SOURCE:** (Thousands of Dollars)

1002 Federal Receipts						
1003 GF Match						
1004 GF						
1005 GF/Program Receipts						
1037 GF/Mental Health						
OTHER						
<b>TOTAL</b>	0.0	0.0	0.0	0.0	0.0	0.0

Estimate of any current year (FY 97) cost: \$ 0.0

**POSITIONS:**

FULL-TIME						
PART-TIME						
TEMPORARY						

**ANALYSIS:** (Attach a separate page if necessary.)

The bill makes gamma-Hydroxybutyrate a schedule IVA controlled substance and could result in charges ranging in offense level from a class B felony down to an A misdemeanor. The Department of Law has not been made aware of any such cases in Alaska.

Prepared by: Barbara K Brink, Director  
 Division: Public Defender Agency

Phone: (907) 264-4414  
 Date: \_\_\_\_\_

Approved by Commissioner: Mark Boyer  
 Agency: Department of Administration

Date: 4/22/97

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# Alaska State Legislature

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119 N. Cushman, Suite 211  
Fairbanks, AK 99701  
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Session Address:  
Room 13

State Capitol  
Juneau AK  
(907) 465-1182

Official Business

Representative Al Vezey

## HB 163

### CLASSIFYING GAMMA HYDROXYBUTYRATE AS A CONTROLLED SUBSTANCE

*Gamma Hydroxybutyrate* (GHB), is known by street names that include Liquid E, Liquid X, GBH, Gib, liquid ecstasy, Scoop, Georgia Home Boy, Natural Sleep-500, and Oxy-sleep. is one of the many "date rape" drugs being used in the United States. Illegal use of the drug is on the increase in the United States and passed illegal drug use trends indicate that Alaska will soon be confronted with GHB's effects. Currently, GHB is not scheduled as a controlled substance in Alaska.

GHB depresses the respiratory system and reduces the amount of oxygen the brain receives, resulting in unconsciousness and loss of memory. As is the case with Rohypnol, victims of drug induced rape through use of GHB can not identify their victims and conviction is difficult and rare. This bill further send the message that we will not tolerate in our society those who would perpetrate sexual abuse.

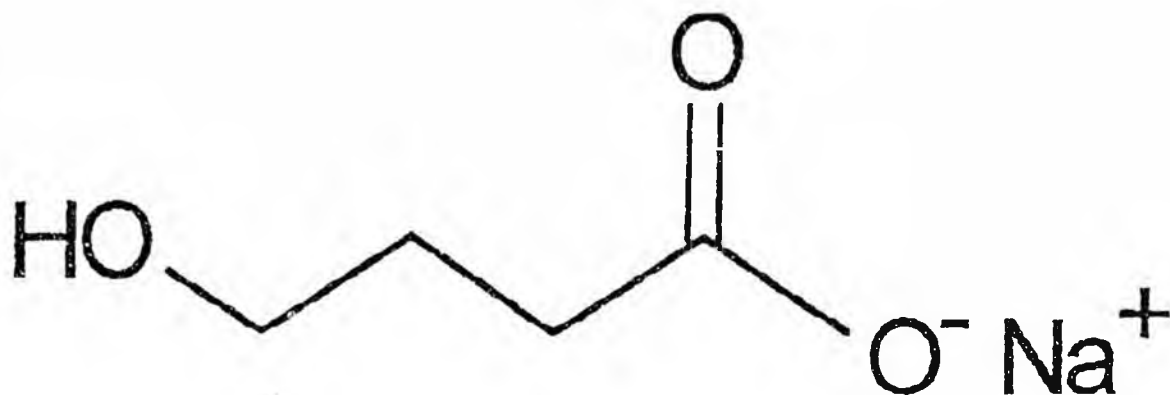
According to James Tolliver of DEA's Seattle office, the major problem with GHB is this drug is exclusively made in home laboratories. He said home brewers mix the chemicals into a milky paste which they let sit. After a while the liquid separates from the powder. If the compound sits longer, the liquid evaporates and the producer has a powder material. The powdery salt dissolve instantly when added to liquid. The drug is odorless and nearly tasteless so is virtuously undetectable in a drink.

Until the drug was banned by FDA, bodybuilders used it as a "soft drug" steroid to build muscles and enhance performance.

Orphan Medical is currently going through the FDA process to get approval to use **Xyrem**, a trademark name for gamma hydroxybutyrate in powder form, for Narcolepsy treatment.

California passed legislation on February 25, 1997 that classifies the drug as a Schedule IV Controlled Substance.

*Getting the Scoop on*  
**gamma-Hydroxybutyrate or GHB:**  
*The New Recreational Drug*



Presented at the 49th Annual Meeting of the  
American Academy of Forensic Sciences

New York, NY

February 17-22, 1997

**THE FOLLOWING PAGES MAY  
NOT FILM LEGIBLY BECAUSE OF  
THE POOR QUALITY OF THE ORIGINAL**

Addresses and Telephone Numbers of Workshop Speakers

*Reference contacts for GHB*

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*Chairman:*

**Kathleen M. Andrews**  
Drug Enforcement Administration  
Western Laboratory  
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Phone: (415) 744-7051 ext.55  
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602

**Jo Ellen Dyer, PharmD.**  
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Regional Poison Control Center  
San Francisco General Hospital  
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San Francisco, CA 94110

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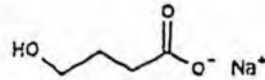
**Thomas DiBerardino, PhD**  
Drug Enforcement Administration  
Office of Diversion Control  
Drug and Chemical Evaluation Section  
E-6249-1  
Washington, D.C. 20537

Phone: (202) 307-7207

# Historical Overview

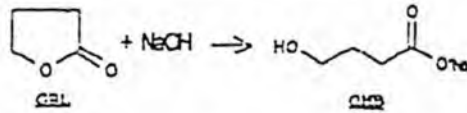
## GHB: gamma-Hydroxybutyrate

- gamma-hydroxybutyric acid, Na<sup>+</sup> or K<sup>+</sup> salt.
- listed as sodium oxybate in Merck Index, 11th ed.



- Usually sold as white chunky solid or dissolved in water/liquid.
- extremely hygroscopic, thus commonly seen as liquid.

## Clandestine Manufacture



- can obtain yield of 70% of the GBL weight.

- legitimate uses for GBL: wood cleaner, in paint removers, tooth aida

## History of GHB

- 1944: GHB introduced in Europe as an alternative anesthetic, but interest diminished when patients experienced grand mal seizures.
- 1963: Developed interest in GHB's role in treating sleep disorders. Research continues today.
- 1971: Japanese study reports of steroid enhancing effects of GHB.
  - increases dopamine levels
  - stimulates growth hormone

# Historical Overview

## 1989 - 1990

- Nov. 1989: L-tryptophan banned and removed from market.
- early 1990: GHB replaces L-tryptophan as OTC sedative. Continues to be sold thru underground to body builders as steroid alternative.
- June - Nov. 1990: 9 states report a total of 57 cases of GHB related illnesses.
- Nov. 1990: Sale and distribution of GHB banned by FDA. GHB no longer OTC.

## 1990 - 1993

- Despite FDA ban, GHB continued to be clandestinely manufactured and sold underground.
- Lost considerable credibility as steroid enhancer by body builders.
- Increased awareness of GHB's psychoactive properties.  
Increased abuse by SS; for its euphoric effects.  
Gained popularity within the MDMA crowd.

## October 31, 1993

River Phoenix collapses and dies outside the Viper Room in L.A.

- initial reports of a GHB overdose spawn nationwide interest in the "legal wonder drug."
- popularity/experimental use in GHB increases.

# ER Cases

## GHB: Gamma Hydroxybutyrate

JO ELLEN DYER, PHARM D

Pharmacist Specialist  
San Francisco Poison Center  
Assist Clinical Professor Pharmacy, UCSF



San Francisco Bay Area Regional Poison Control Center

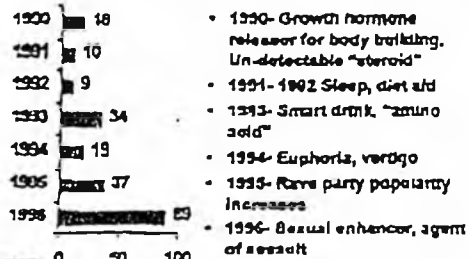
### San Francisco Bay Area Poison Center

- SF PCC a 24 hour public and professional consult service for poisoning and drug overdose.
- Serves 10 Bay Area counties. Population base of 5 million & 100 hospitals.
- Provides a sentinel service
  - Poison Center consultation is not mandatory.
  - Increased reporting suggests more widespread use.



San Francisco Bay Area Regional Poison Control Center

### GHB Incidence & Reason for Abuse



San Francisco Bay Area Regional Poison Control Center

GHB workshop: Dr. Jo Ellen Dyer, page 1

## ER Cases

### GHB Case Summary

---

30 year old muscular, male, bodybuilder was working out at a health club when he stopped moving and fell to the floor with 2 episodes of muscle jerking. 911 responded. He was unconscious and vomited during transport.

In the ED he was comatose, unresponsive to pain, GCS 3. HR 52, BP 130/80, RR 22.

He was lavaged and given charcoal. CT scan was neg. Glucose 130mg/dl. Urine tox neg.



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### GHB Case Summary cont.

---

Decreased gag reflex and irregular respirations prompted intubation. He was admitted to the ICU. In the morning, he was awake and extubated.

He described using GHB for 7 months for its "anabolic" effects. The day of hospitalization he doubled his usual dose of GHB, taking 1 scoop before and another during his workout.



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### GHB Clinical Symptoms

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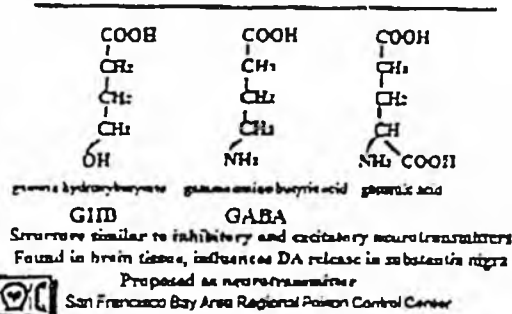
- Vomiting
- Bradycardia
- Coma
- Clonic muscle movements
- Induction & emergence delirium
- Cheyne-Stokes respiration
- Respiratory depression
- Dependence



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# ER Cases

## GHB Structure



## GHB Development and Legal Use

- Synthesized as an anesthetic in 1960
- Used in Europe as a sedative
  - European generic name - Sodium Oxybate
  - France - Gamma OH
  - Germany - Somniant
- Studied in etoh & opiate withdrawal
- US orphan drug for narcolepsy



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## GHB Misrepresentation

- Amino acid
- Steroid
- Enzyme
- Designer drug
  - chemical congener of illicit drug
  - to circumvent the law.



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# ER Cases

## GHB Various Illicit Names

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- Scoop
- Liquid Ecstasy, Liquid E
- Gamma Hydrate
- Grievous Bodily Harm
- Somatomax PM
- Oxy-sleep
- Natural Sleep-500
- GHB



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## GHB Available Forms

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- White powder precipitated from gamma butyrolactone by addition of NaOH. A home brew.
- White hygroscopic powder. Sold O.T.C. in health food stores in 1990.
- Colorless, odorless, liquid which has mild salty, soapy taste. Sold by the drink or capful at rave parties.



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## What is a RAVE?

---

- All night dance party.
- Alcohol served but, service stops at legal hours 0200.
- Many transient drug fads.
  - Smart drugs - health claims
  - Mind altering - LSD, PCP, ketamine
  - Amphetamines - ecstasy
  - GHB



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# ER Cases

## Case Summary Rave

---

Three young women friends at a rave dance party tried a new "smart drink," GHB; a few oz of a salty, clear liquid drink. Within 30 min, each in turn passed out.

In the ED, they were comatose, unresponsive to painful stimuli with GCS 3.



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## Case Rave cont.

---

	VITAL SIGNS			COMA
	HR	BP	RR	DURATION
Pt #1	66	109/64	16	3 HR
Pt #2	55	92/P	18	3.5 HR
Pt #3	62	135/71	16	2 HR



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## Case Rave cont.

---

The women woke alert oriented within 3.5 hr of ingestion having no recollection of the events.

Standard urine tox was negative, but, GHB was detected by the SF M.E.'s assay. Urine levels varied:

Pt #1=141mg/ml Pt#2=2mg/ml Pt#3=10mg/ml

Reference: J. Anal. Tox. 1994;16:357-358



San Francisco Bay Area Regional Poison Control Center

GHB workshop: Dr. Jo Ellen Dyer, page 5

# ER Cases

## Medical Diagnosis & Treatment

- Diagnosis depends on history at the scene, along with consistent symptoms and time course
- Protect airway & support respiration
- Opiate and b2p antagonists ineffective
- Lavage or charcoal are of limited benefit due to the small doses, fast onset, short duration and high risk of aspiration
- ED observation period → 6 hours
- Urine toxicology currently unavailable



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## GHB Kinetics

Dose mg/kg	Peak time min	T <sub>1/2</sub> min
12.5	25	20
25	30	22
50	45	23

- Absorption - rapid, onset 10-15 min. Time to peak absorption increases with dose.
- Elimination - Rapid & non-linear, through TCA cycle to CO<sub>2</sub> and water. T<sub>1/2</sub> increases with dose.
- GHB undetectable in urine after 12 hours.



Reference: Eur J Clin Pharmacol 1980;45:153-6  
San Francisco Bay Area Regional Poison Control Center

## GHB Dose Response

### Controlled use

- 10mg/kg amnesia, hypnosis
- 20mg/kg somnolence, euphoria, vertigo
- 50mg/kg loss of consciousness, arousable
- 60mg/kg coma, unarousable

### Variable effects with illicit use

- Potentiated by depressants, etoh, fasting
- Non-standard concentrations



Tolerance  
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# ER Cases

## Case Summary Dependence

---

23 year old female, college student, and bodybuilder, was taking 3-5 "capsfull" of liquid GHB daily for a year for the purported anabolic effects. During the past 6 weeks she increased her dosing frequency to every 3 hours A.T.C. to prevent the anxiety & tremors she experienced.



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## Case Dependence cont.

---

When admitted to detox center, she was increasingly paranoid with visual and auditory hallucinations. HR 110, BP 138/98, T 98.5

Urino toxicology was negative.

Treatment included propranolol, benzodiazepines and phenothiazines.



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## Case Dependence cont.

---

She experienced a 9 day withdrawal course with paranoia, agitation and delirium. Six months later she remains off all medications and finished the semester with a 4.0 GPA.

The GHB sample was assayed to contain GHB 721mg/ml. Each tsp. contained a 60mg/kg dose.



Assay by CEA Western Labs  
San Francisco Bay Area Regional Poison Control Center

# ER Cases

## GHB Withdrawal Symptoms

---

- Tremor
- Paranoia
- Agitation
- Hallucinations-visual and auditory
- Confusion
- Delirium
- Hyperadrenergic

Sedative/hypnotic & alcohol withdrawal syndromes similar, and may also include fever and seizures.



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## GHB Dangerous Drug of Abuse

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- Use is increasing rather than waning.
- GHB clearly has deleterious and life-threatening acute health effects.
- Physical dependence and withdrawal syndromes are described.
- Public misinformation abounds:  
**SAFETY EFFICACY LEGALITY**
- Assaults with GHB also reported.

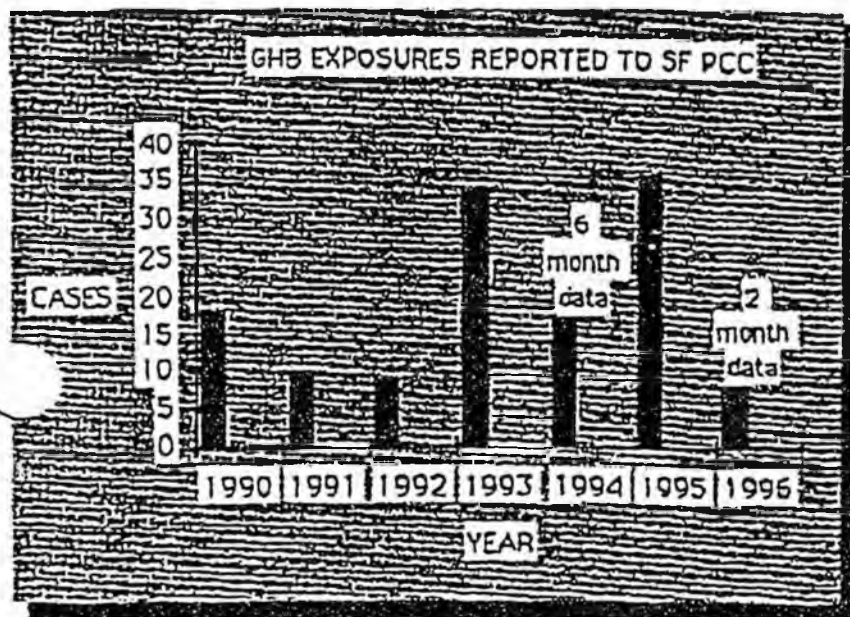


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## GAMMA HYDROXYBUTYRATE

### I. AVAILABILITY AND CURRENT STATUS

- Synthesized in 1960. Initially evaluated and currently available in Europe as an anesthetic and sedative.
- Currently available in the United States as an Orphan drug for treatment of narcolepsy.
- GHB has been illicitly promoted; initially as a growth hormone releaser, diet aid, soporific, more recently for euphoric effects and sexual enhancement.
- This evident abuse has lead the DEA to evaluate GHB for inclusion in schedule one of the controlled substances act.
- There are sporadic reports of use across the United States including California, Arizona, Texas, Missouri, Minnesota, Ohio, Virginia, South Carolina, Georgia, and Florida.
- Sold as a white crystalline hygroscopic powder or clear liquid solution.
- Testimonials of GHB's beneficial effects and recipes for compounding are available on the internet.
- The annual number of GHB exposures reported to the San Francisco Regional Poison Control Center is increasing from the initial reports in 1990.

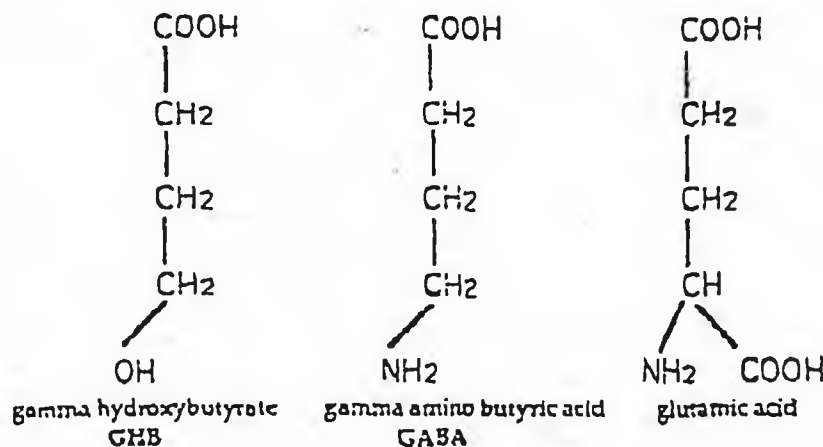


### VARIOUS NAMES

4 hydroxybutyrate  
Gamma Hydrate  
Gamma Hydroxy Butyrate  
Gamma OH  
GBH=Greivous Bodilly Harm  
Georgia Home Boy  
GHB  
Liquid Ecstasy  
Natural Sleep-500  
Oxy-Sleep  
Scoop  
Sodium Oxybate  
Somatomax  
Somsanit

### II. PHARMACOLOGY

- GHB is an anesthetic without analgesic properties.
- GHB has been found naturally occurring in brain and nonneuronal tissues.
- GHB receptor sites and an antagonist (NCS-382) have been identified.
- GHB influences dopaminic release in the substantia nigra.
- GHB has a structure similar to inhibitory and excitatory neurotransmitters. It has been proposed as a neurotransmitter.



### III. KINETICS

A. Absorption of GHB is rapid. Onset of effects occur 10 to 15 minutes after an oral dose.

1. Absorption is capacity limited.

2. Time to peak absorption (Tp) increases with dose.

Dose	12.5mg/kg	50mg/kg
Tp	25 min	45 min

B. GHB exhibits nonlinear kinetics within the therapeutic dose range 12.5 to 50mg per kg.

1. Disproportionate increase in amount absorbed and decrease in rate of elimination occur with increasing dose.

2. Difficulty predicting dose response and duration of effects are problems with GHB's use as an anesthetic and sedative.

C. Protein binding insignificant.

D. Elimination is rapid, but capacity limited.

1. GHB is metabolized through the Tri Carboxycyclic Acid cycle to carbon dioxide and eliminated in expired air.

2. Half life, evaluated in a small number of patients, increases only slightly with dose.

Doses	12.5mg/kg	50mg/kg
T <sub>1/2</sub>	20 min	25 min

### IV. CLINICAL EFFECTS

#### A. CNS

1. Coma often has abrupt onset and may be profound. Glasgow Coma Scores of 3 are reported. Patients arouse within 2-3 hours, often awakening abruptly, and walk out of ED in 4-6 hours.

2. Rare tonic-clonic seizures and more commonly clonic jerking occurs with GHB overdose. A tonic clonic episode was reported during clinical trials. Petit mal or absence seizures are reported in animals.

3. Emergence delirium with confusion and agitation may be seen upon awakening.

#### B. Cardiovascular

1. Bradycardia with heart rates of 50 to 60 and mild hypotension are common

2. Patients may be stimulated to higher rates and pressures which may be sustained.

#### Respiratory

1. Irregular or Cheyne-Stokes respirations occur. The cause of death in animals is respiratory depression.

2. However, patients with GHB overdoses alone have maintained good oxygen saturation, although, we have seen mild rises in PCO<sub>2</sub>

#### D. Gastrointestinal.

1. Nausea and vomiting are common.

2. Reported as 29% in a controlled case series.

#### E. Hypothermia. Similar to other sedative drugs.

#### F. Withdrawal

1. Unsubstantiated reports of withdrawal symptoms have been reported with chronic heavy use.

2. Symptoms include irritability, insomnia, hypertension, and tachycardia.

#### G. Death

1. Deaths from GHB alone have not been reported.

4. Anecdotal report of death from GHB ingested with ethanol.

3. Case report of death attributed to GHB combined with heroin.

### V. LABORATORY

A. Blood and urine assays are not currently available.

B. GHB is not routinely assayed by coroners.

C. Local medical examiner has recently developed an assay.

### VI. DIAGNOSIS

A. Abrupt onset coma with bradycardia, irregular respirations, clonic jerking, or vomiting.

B. The current milieu of use often provides clues to identification.

C. GHB is rarely used by the patient alone and onset of symptoms is fast so often a history of GHB use is provided.

### TREATMENT

#### Decontamination

1. Ipecac contraindicated.

2. Gastric lavage or activated charcoal of little benefit unless other drugs involved.

B. Atropine has been used for bradycardia.

C. Supportive care, aspiration precautions.

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## Orphan Medical Product Information

Product	Application
<b>Antizol-Vet™</b> (fomepizole) for injection	Antidote for ethylene glycol (antifreeze) poisoning in dogs
<b>Cystadane™</b> (betaine anhydrous for oral solution)	Homocystinuria, a genetic disease
<b>Elliotts B™ Solution</b> (buffered intrathecal electrolyte/dextrose injection)	Diluent for intrathecally-administered methotrexate sodium and cytarabine
<b>Antizol™</b> (fomepizole) for injection	Antidote for ethylene glycol (antifreeze) poisoning in humans
<b>Busulfanex™</b> (busulfan) for injection	Preparatory regime in bone marrow transplantation
<b>Caprogel™</b> (aminocaproic acid) topical gel	Bleeding in the eyes, usually as a result of trauma
<b>Cartilage powder</b>	Wound healing in patients with decubitis or diabetic ulcers
<b>Colloidal bismuth subcitrate</b>	Reduction of Helicobacter pylori (H. pylori) in the mouth
<b>Colomed™</b> (short chain fatty acid) enema	Chronic radiation proctitis (rectal inflammation after radiation)
<b>Intrachol™</b> (choline chloride) for injection	Choline deficiency in patients receiving total parenteral nutrition
<b>Sucraid™</b> (fructofuranosidase) liquid	Sucrase deficiency, a genetic disease
<b>Xyrem™</b> (gamma hydroxybutyrate) powder	Narcolepsy



**M M W R**

MORBIDITY AND MORTALITY WEEKLY REPORT

- 281 Gamma Hydroxy Butyrate Use — New York and Texas, 1995–1996
- 283 Pregnancy-Related Behaviors Among Migrant Farm Workers — Four States, 1983–1993
- 286 Resources and Priorities for Chronic Disease Prevention and Control, 1994
- 288 Hepatitis A Associated with Consumption of Frozen Strawberries — Michigan, March 1997

**Gamma Hydroxy Butyrate Use —  
New York and Texas, 1995–1996**

Gamma hydroxy butyrate (GHB) is a central nervous system depressant approved as an anaesthetic in some countries; however, with the exception of investigational research, it is not approved for any use in the United States. Primary groups using GHB include party and nightclub attendees and bodybuilders. In addition, GHB is one of several agents characterized as a "date rape" drug. During August 1995–September 1996, poison control centers in New York and Texas received reports of 69 acute poisonings and one death attributed to ingestion of GHB. This report describes two cases and summarizes the investigations of GHB use in Texas and New York. The findings of these investigations underscore the health hazards associated with use of GHB.

**Texas**

At 12:30 p.m. on August 5, 1996, a 17-year-old girl with no previous history of drug or alcohol use was admitted to an emergency department (ED) because of cardiac arrest with cardiopulmonary resuscitation in progress. She was pronounced dead at 12:40 p.m. On the night of August 4, she had been at a local dance club, where she was reported to have ingested soft drinks. An autopsy was performed; multiple toxicologic screens of blood and bile samples did not detect alcohol or other drugs. However, on September 13, a test on previously obtained serum detected a serum level of 27 mg/L of GHB.

From November 14, 1995, through September 30, 1996, the Texas Department of Health received reports of 57 persons who had adverse health effects attributed to ingestion of GHB, including the one death described in this report. Of the 57 reports, 30 were received from the Dallas Poison Control Center, and 26 were received from the Galveston Poison Control Center. The death was reported by the Assistant Medical Examiner in Harris County, who listed the death as a homicide as the result of GHB toxicity. Of the 56 reports from the poison control centers, 34 involved males; 10 reports involved teenagers aged 16–18 years. Nineteen persons were treated in and released from hospital EDs, and 25 were admitted to intensive-care units with severe clinical symptoms, including coma (15), respiratory depression (three), and agitation (one); six required intubation. Of the 56 reports, 12 included ingestion of both alcohol and GHB, and three included the use of GHB with other drugs.

*Gamma Hydroxy Butyrate Use — Continued***New York**

On October 30, 1996, a 20-year-old man who was unresponsive after several episodes of vomiting was taken to an ED 2½ hours after ingesting a mixture of GHB and sodium hydroxide. He was intubated and admitted to the intensive-care unit, where a bronchoscopy indicated friable lung tissue that was attributed to aspiration of gastric contents containing sodium hydroxide. He developed bilateral pneumothoraces and had generalized seizures and was transferred to a third hospital for possible extracorporeal membrane oxygen therapy and lung transplant. However, his condition improved, and he was extubated and placed on supportive care and recovered.

During August 27, 1995–October 30, 1996, the Long Island Regional Poison Control Center received reports of 13 persons with exposure to GHB. All 13 were evaluated in hospital EDs. Four of the 13 also consumed ethanol. All five persons initially had altered mental status, including coma (three), stupor (one), and inebriation (one). Eight of the 13 persons had prepared GHB at home using sodium hydroxide and butyrol lactone; of the eight, three required admission to a hospital.

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**Editorial Note:** GHB increases dopamine levels in the brain and has effects through the endogenous opioid system; most GHB is excreted during the first hours after ingestion (1). Manifestations of acute GHB toxicity include coma, seizures, respiratory depression, and vomiting. Other documented effects of GHB include amnesia and hypotonia (associated with doses of 10 mg/kg body weight); a normal sequence of rapid eye movement (REM) and non-REM sleep (doses of 20–30 mg/kg body weight); and anesthesia (doses of approximately 50 mg/kg body weight). Doses of >50 mg/kg body weight can decrease cardiac output and produce severe respiratory depression, seizure-like activity, and coma (2); coma and respiratory depression may be potentiated by concomitant use of alcohol (3). There is no antidote for GHB overdose, and treatment is restricted to nonspecific supportive care. Patients in New York and Texas have required ED care; many of those hospitalized have required ventilatory support and intensive care.

In the United States, GHB has been produced clandestinely in widely varying degrees of purity. GHB has been marketed as a liquid or powder and has been sold on the street under names such as "Grievous Bodily Harm," "Georgia Home Boy," "Liquid Ecstasy," "Liquid X," "Liquid E," "GHB," "GBH," "Soap," "Scoop," "Easy Lay," "Salty Water," "G-Riffick," "Cherry Menth," and "Organic Quaaluda." Improper preparation of GHB can result in a mixture of GHB and sodium hydroxide that can be severely toxic because of the combined effects of the GHB and the direct caustic effects of sodium hydroxide.

In Dallas, GHB use has been associated with events at which several persons have been found comatose. Some persons who have sustained adverse effects of GHB have reported being given the drug surreptitiously (e.g., having it slipped into their drink), while others have admitted to intentional use. The Drug Enforcement

*Gamma Hydroxy Butyrate Use — Continued*

Administration (DEA) is examining the distribution and abuse of GHB in the United States; although distribution has been documented in 27 states, GHB use is highly prevalent in California, Florida, Georgia, and Texas.

In the United States, GHB is under specific Food and Drug Administration exemptions for investigational research protocols for the treatment of narcolepsy. Although possession of GHB is not illegal under federal law, its manufacture and sale is prohibited under the Food, Drug, and Cosmetic Act. In Georgia and Rhode Island, state controlled substances acts have classified GHB into Schedule I\*, and other states are considering similar action. In addition, the DEA is gathering information and considering a scheduling review for possible control of GHB under the Federal Controlled Substances Act†. Public health officials should report episodes of adverse effects of GHB use to DEA, telephone (202) 307-7183.

*References*

1. Veyer P, Mandel P, Maltre M. Gamma-hydroxy butyrate, a possible neurotransmitter. *Life Sci* 1987;41:1547-57.
2. CDC. Multistate outbreak of poisonings associated with illicit use of gamma hydroxy butyrate. *MMWR* 1990;39:861-3.
3. Mamelek M. Gammahydroxybutyrate: an endogenous regulator of energy metabolism. *Neurosci Biobehav Rev* 1989;13:187-98.

\*Drugs that do not have currently accepted medical use in the United States, have a high abuse potential, and are not proven to be safe under medical supervision.

†Public Law no. 91-513.

### **Pregnancy-Related Behaviors Among Migrant Farm Workers — Four States, 1989-1993**

The U.S. workforce includes an estimated 3-5 million migrant and seasonal farm workers (1,2); approximately 16% of migrant farm workers are women (R. Mines, U.S. Department of Labor, personal communication, 1997). Early enrollment in prenatal care and proper weight gain during pregnancy can reduce the risk for poor birth outcomes (1-4). To characterize pregnancy-related behaviors and outcomes among migrant farm workers, CDC analyzed data for 1989-1993 on prenatal-care use, weight gain during pregnancy, and birth outcomes among migrant farm workers enrolled in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) in four states participating in CDC's Pregnancy Nutrition Surveillance System (PNSS). This report presents the results of that analysis, which indicate that the goals of the national health objectives for the year 2000 for pregnant migrant women enrolled in WIC have not been met.

The PNSS collects prenatal and postpartum information about women and their infants who are enrolled in publicly funded health, nutrition, and food-assistance programs. For this report, PNSS data from four states were compared for two groups of pregnant women enrolled in WIC programs: women who were classified as migrants (n=4840) and those who were not (n=610,728). A migrant farm worker was defined as a person whose primary employment is in agriculture on a seasonal basis, who has been employed within the previous 24 months, and who establishes, for the purposes of such employment, a temporary abode in the United States (5).

Overall, migrants were more likely than nonmigrants to be of Hispanic origin, younger, and married and were less likely to have attained a high school education

## **GAMMA-HYDROXYBUTYRATE (GHB)**

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Pharmacologist  
Drug and Chemical Evaluation Section  
Office of Diversion Control  
Drug Enforcement Administration  
March 27, 1997

**Other Names:** Sodium Oxybate, 4-Hydroxybutanoic acid monosodium salt.

### **Pharmacological Effects of GHB:**

Naturally occurring metabolite in mammalian tissues.  
Depression of the Central Nervous System (CNS) --> Sedation, Sleep  
1 to 3 Grams ----> Sleep  
Greater than 3 to 4 Grams ----> Anesthesia  
Promotes release of growth hormone from pituitary gland.  
Convulsions  
Production of a trance-like state.  
Used as an animal model for petit mal epilepsy.  
Euphoria  
Potentiates CNS Effects of Alcohol and Other Depressants

### **Clinical Uses of GHB**

Anesthetic Adjunct  
Approved for this use in some countries, but not U.S.  
Narcolepsy  
Not yet approved for this use in any country.  
Under experimental study, using an FDA protocol in the United States.  
Investigational New Drug Application from the FDA exist on the drug.  
Specifically to treat nighttime sleep disruption in narcoleptics.  
Alcohol Withdrawal  
Not an approved use in any country.  
Experimental use only.  
Heroin Withdrawal  
Not an approved use in any country.  
Experimental use only.

## **Marketing Status of GHB**

Has never been approved by the Food and Drug Administration (FDA) for medical use in the United States.

Is currently under development by the drug company, Orphan Medical Inc., for the treatment of narcolepsy in the U.S.

Approval by FDA for medical use in the United States is expected in 2 to 3 years providing that there are no problems with the development process.

Available in Tunisia, New Zealand, Netherlands, Morocco, Italy, French West Africa, France, Spain, Hungary and Germany as intravenous anesthetic.

Trade Names in other countries: Alcover, Anetamin, Gamma-OH, Somsanit  
All are injectable solutions.

## **Disposition of GHB in Body**

Readily absorbed in gastrointestinal tract.

Readily reaches the brain.

Metabolized in liver to carbon dioxide and water.

No active metabolites.

Excreted in urine in largest amount within 2 to 5 hours after ingestion.

Not detectable in biological fluids (blood, urine) after 12 hours following ingestion.

## **Individuals Who Abuse GHB**

Bodybuilders

High School and College Students

Rave Party Attendees

Night Club Attendees

Individuals Intent on Sexual Assault

## **Reasons Cited for Abuse of GHB in the United States**

Promotion of muscle growth via increases in endogenous growth hormone production.

Used as sedative to come down off of stimulants (e.g. ephedrine).

Achieve an intoxicated "high" (usually in combination with alcohol).

Cheap substitute for ecstasy (MDMA).

Mentally and physically incapacitate women for purposes of committing sexual assault.

Promoted as nutritional supplement.

Abused as aphrodisiac.

## Use of GHB to Commit Sexual Assault.

GHB is used to mentally and physically incapacitate potential sexual assault victims.

The DEA is aware of sexual assault cases involving flunitrazepam in Florida, California and Louisiana.

In at least two cases in Florida, GHB has been detected in the urine of sexual assault victims.

GHB should be looked for in the urine of potential sexual assault victims.

GHB will primarily be found in the first urine sample voided after the assault victim wakes up.

GHB is eliminated quickly and is not likely to be detectable by 12 hours post-administration.

## Forms of GHB on Street:

### Liquid Form

Most common form encountered.

Usually clear.

Usually viscous.

Has a salty taste.

Clandestinely made.

### Powdered Material

Grainy

White to off-white (sand) colored.

Tends to take on water (hygroscopic).

Most likely primarily clandestinely produced.

At least one foreign source has been identified.

Not known how much if any GHB imported from foreign source.

Available from some chemical supply stores in powdered form.

### Specific Formulations

Rarely found.

Has been found in capsule form.

## Street Names for GHB:

Greivous Bodily Harm (GBH)

Georgia Home Boy

Liquid Ecstasy

Liquid X

Liquid E

Liquid G

G

Soap

GHB

GBH

Scoop

Easy Lay

Salty Water

G-riffick

Cherry Meth

Organic Quaalude

### How is GHB Taken:

Oral Administration Only.

Usually in quantities of 0.5 to 2 or 3 grams per dose.

Dose can vary considerably.

Liquid GHB

Taken either alone or in other drinks.

Primarily used in conjunction with alcohol consumption.

In Texas - 1 Bottle Cap full about every hour.

Powdered GHB

One to two spoonfuls at a time.

Dissolved in liquids such as water or alcohol beverages.

### Adverse Effects of GHB:

Drowsiness

Dizziness

Euphoria

Reemergent Delirium with Hallucinations

Agitation

Restlessness

Delusions

Headache

Nausea and Vomiting

Enuresis

Excessive Salivation

Sweating

Reduced Body Temperature (Hypothermia)

Reduced Muscle Tone (Hypotonia)

Reduced Blood Pressure (Hypotension)

Decreased Heart Rate (Bradycardia)

Decreased Respiration Rate

Seizures -

Absence Seizures

Grand Mal Seizures

Amnesia

Reduction or Loss of Gag Reflex

Abrupt Loss of Consciousness

Coma

DEATH

(Primarily with other drugs)

Effects of GHB appear with an onset of about 15 minutes and last approximately 3 hours.

GHB potentiates the central nervous system (CNS) depressant effects of alcohol and other CNS depressants. Likewise, alcohol and other CNS depressants will potentiate the CNS depressant effects of alcohol.

Dependence can develop with prolonged use of the drug.

There have been numerous emergency room encounters with what is presumed to be GHB in many parts of the United States. Some of the states where GHB has been encountered in the emergency rooms are listed below.

California	Michigan
Florida	Nebraska
Georgia	New York
Illinois	North Carolina
Iowa	Rhode Island
Louisiana	Texas
Massachusetts	

**Deaths In Which GHB Was Found in Biological Fluids. For these cases the DEA has received toxicology and/or autopsy reports from toxicology laboratories and medical examiners' offices. (The fact that GHB was detected in the biological fluids does not necessarily mean that GHB was the sole cause of death!)**

May, 1993	Italy	42 Year-old heroin addict in which GHB, morphine and 6-monoacetylmorphine were found in various biological fluids and tissues. This case was reported in a 1996 issue of the Journal of Forensic Science.
March, 1995	Huntington Beach California	White, male, bodybuilder (34 years old) with GHB, ethanol and MDMA in blood.
October 1995	Omaha, Nebraska	White, female found with ethanol in in blood and GHB in urine.
January 1996	Walnut Creek, California	White, male (25 years old) with ethanol and GHB in blood.
March 1996	Charlotte, North Carolina	White male with ethanol and GHB in blood.
April, 1996	Killeen, Texas	White female with gamma-butyrolactone detected in blood.
May 11, 1996	Florida	White female 26 years old. (Details not releasible at this time)

August 1996	Ocean City, Maryland	Professional male wrestler found to have GHB, ephedrine, anabolic steroids and alcohol in his system.
August 1996	La Porte, Texas	Hispanic female (17 years old) found to have GHB but no other drugs in blood.
Sept. 1996	Pomona, California	White, Male (18 years old) found with ethanol and GHB in postmortem blood.
December 1996	Florida	White, male 30 years old. (Details cannot be released at this time.)
January 1997	Florida	White, male 25 years old. (Details cannot be released at this time.)

Foreign newspaper articles have reported on the GHB-related death of a 21 year old female in Stourbridge, West Midlands in Great Britain in March 1996. DEA has no confirmation of this case.

On February 18, 1997, the Food and Drug Administration (FDA) issued a warning that GHB could be deadly. According to the report, GHB is blamed for dozens of hospitalizations and at least three deaths. The FDA urged police, emergency rooms and coroners to begin aggressively testing for GHB when young people wind up in the emergency room with the symptoms produced by GHB.

It is becoming increasingly evident that the consumption of GHB in combination with sublethal doses of alcohol can result in death.

#### **Source and Distribution of GHB Found on Street in U.S.**

Primarily via clandestine laboratory synthesis.

Usually liquid is formed.

Need chemicals: Gamma-Butyrolactone, Sodium Hydroxide and Hydrochloric Acid, Buffer Solutions.

Very little diversion or smuggling of pharmaceutical and chemical grade GHB.

In Texas, bottle cap full of liquid GHB sold for \$10.00

In some states, liquid GHB sold by the drops dispensed from a medicine dropper for \$5.00 per several drops.

## Clandestine Synthesis of GHB

Conversion of gamma-butyrolactone with base to GHB.

One-Step Reaction

No special reactions conditions required.

Special chemical knowledge is not required.

Required chemicals are cheap and easy to obtain.

Synthesis has been described extensively on the Internet.

Chemicals Used:           Gamma-Butyrolactone  
                              Sodium or Potassium Hydroxide  
                              Ethanol (Ethyl Alcohol)  
                              Acid - Hydrochloric and/or Sulfuric  
                              PH Buffer Solutions

Chemical Equipment:    General Lab Equipment  
                              Mixing Bowl  
                              PH Meter or PH Paper  
                              Hot Plate

Gamma-Butyrolactone (GBL) is the precursor for GHB. GBL cannot be used to make any controlled drugs. Finding GBL at a potential laboratory site indicates the presence of a GHB clandestine laboratory.

GBL is a liquid that can be purchased fairly cheaply from most chemical supply stores in large (kilogram) quantities. Sodium or potassium hydroxide is cheap and can be purchased in large (hundreds of grams or kilograms) quantities. Such large quantities allow for the synthesis of large (kilogram) quantities of GHB.

### States with Documented GHB Distribution As Determined From State and Local Forensic Laboratory Analysis of Submitted Exhibits:

Alabama	Louisiana	Rhode Island
Arizona	Maryland	South Carolina
California	Michigan	Texas
Colorado	Missouri	Virginia
Florida	Nebraska	Wisconsin
Georgia	New Hampshire	Iowa
Hawaii	New York	North Carolina
Illinois	Ohio	
Kansas	Oklahoma	

**Submission of GHB and GBL Exhibits to DEA Forensic Laboratories Over Period of August 1994 to February 1, 1997. (Information Collected From the DEA Stride System)**

26 Total Cases Involving 40 Total Exhibits.

Breakdown of Cases by Year

1994 - 2

1995 - 11

1996 - 12

Of 40 Total Exhibits

25 Exhibits were liquids.

14 Exhibits were powdered material

1 Exhibit was capsules each containing 1.14 grams GHB.

Distribution of Cases Among States

California 8

Illinois 3

Georgia 3

Louisiana 2

Florida 2

Texas 2

Michigan 2

Arizona 1

Rhode Island 1

Colorado 1

Massachusetts 1

Examination of DEA casefiles outside of the STRIDE system reveals additional cases involving GHB clandestine laboratories in Washington, North Carolina and Texas.

The DEA has several cases in which the clandestine synthesis of GHB was carried out in clandestine methamphetamine laboratories.

**Regulatory Control Actions**

Not presently scheduled under the federal Controlled Substances Act.

DEA is currently collecting the data to administratively place GHB under the Federal Controlled Substances Act.

In November, 1991, the FDA banned the sale of GHB in health food stores.

It is a violation of the federal Food, Drug and Cosmetic Act to manufacture and sell GHB in the United States.

It is not necessarily illegal to be in possession of GHB for personal use only.

Georgia and Rhode Island have placed GHB in Schedule I of their state's Controlled Substances Act.

March 20, 1997 Florida placed GHB permanently into Schedule II of state

Controlled Substances Act.  
Texas, Virginia, Hawaii, Louisiana, Michigan, Nebraska, Tennessee, and  
California are moving towards the scheduling of GHB under  
their state laws.

**Countries With GHB Abuse:**

United States  
England  
Spain  
Sweden  
Australia  
Italy  
Germany  
Netherlands

HOUSE BILL NO. 163  
IN THE LEGISLATURE OF THE STATE OF ALASKA  
TWENTIETH LEGISLATURE - FIRST SESSION

BY REPRESENTATIVE VEZEY

Introduced:  
Referred:

A BILL  
FOR AN ACT ENTITLED

1 "An Act relating to designating gamma-Hydroxybutyrate as a schedule IVA  
2 controlled substance; and providing for an effective date."

3 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

4 \* Section 1. AS 11.71.0(b) is amended by adding a new paragraph to read:

5 (27) gamma-Hydroxybutyrate.

6 \* Sec. 2. This Act takes effect immediately under AS 01.10.070(c).