U.S. Department of Transportation
Federal Aviation Administration

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Wednesday, August 07, 2002

National Transportation Safety Board
1515 W. 190th St., Suite 555
Gardena, CA 90248

ACCIDENT # 0171 **INDIVIDUAL#:** 001 **NAME:** BRAND, MICHAEL A. **MODE:** AVIATION

DATE OF ACCIDENT 07/04/2002 **DATE RECEIVED** 07/10/2002 **PUTREFACTION:** No

N # N8145M **NTSB #** LAX02FA214 **CAMI REF #** 200200171001

LOCATION OF ACCIDENT San Dimas, CA

SPECIMENS Bile, Blood, Brain, Gastric, Heart, Kidney, Liver, Lung, Muscle, Spleen, Urine, Vitreous

FINAL FORENSIC TOXICOLOGY FATAL ACCIDENT REPORT

CARBON MONOXIDE: The carboxyhemoglobin saturation was determined by spectrophotometry with a 10% cut off.

>> NO CARBON MONOXIDE detected in Blood

CYANIDE: The presence of cyanide was screened by Conway Diffusion. Positive cyanides are quantitated using spectrophotometry. The limit of quantitation of cyanide is 0.25 ug/mL. Normal blood cyanide concentrations are less than 0.15 ug/mL, while lethal concentrations are greater than 3ug/mL.

>> NO CYANIDE detected in Blood

VOLATILES: The volatile concentrations were determined by headspace gas chromatography at a cut off of 10 mg/dL. Where possible, positive ethanols were confirmed by Radiative Energy Attenuation.

>> NO ETHANOL detected in Vitreous

DRUGS: Immunoassay and chromatography are used to screen for legal and illegal drugs which include: amphetamine (0.010), opiates (0.010), marihuana (0.001), cocaine (0.020), phencyclidine (0.002), benzodiazepines (0.030), barbiturates (0.060), antidepressants (0.100), antihistamines (0.020), meprobamate (0.100), methaqualone (0.100), and nicotine (0.050). The values in () are the threshold values in ug/mL used to report positive results. Values below this concentration are normally reported as not detected. GC/Mass Spec, HPLC/Mass Spec, or GC/FTIR, is used to confirm most positive results.

>> 0.011 (ug/mL, ug/g) BUPROPION METABOLITE detected in Blood
>> BUPROPION METABOLITE detected in Urine

[redacted] AUG 29 2002

Dennis V. Canfield, Ph.D.
Manager, Toxicology and Accident
Research Laboratory

Brodifacoum: Brodifacoum is a Rodenticide (anticoagulant). Victims of large doses exhibit HEMATURIA, NOSEBLEED, HEMATOMATA, BLEEDING GUMS, and MELENA, ABDOMINAL PAIN and BACK PAIN probably reflect hemorrhage in the abdominal and retroperitoneal tissues. WEAKNESS occurs as a result of ANEMIA. RENAL COLIC often complicates severe hematuria. Nasal and gastrointestinal hemorrhages have occasionally caused death from exsanguination

Brompheniramine: Brompheniramine is a common over the counter antihistamine used in the treatment of hat fever and other allergies. Therapeutic levels range from 0.012 to 0.017 µ g/mL in whole blood. The half-life is about 15 hours. Warnings - may impair mental and/or physical ability required for the performance of potentially hazardous tasks (e.g., driving, operating heavy machinery).

Bupropion: Bupropion is a drug used in the treatment of depression and is also currently used for the management of smoking cessation (Zyban®). Therapeutic levels range from 0.091 to 0.143 µ g/mL in plasma. Plasma protein binding is about 80%. The elimination half-life is about 14 hours. Warnings include a dose dependant risk of seizures. Warnings - may impair mental and/or physical ability required for the performance of potentially hazardous tasks (e.g., driving, operating heavy machinery).

Buspirone: Buspirone is a drug used in the treatment of anxiety. Therapeutic levels range from 0.001 to 0.006 µ g/mL in plasma. Plasma protein binding is about 86%. The elimination half-life is about 3 hours. Buspirone is different from other anxiolytics in that it has little if any typical anti-anxiety side effects, such as sedation and physical impairment. Warnings - may impair mental and/or physical ability required for the performance of potentially hazardous tasks (e.g., driving, operating heavy machinery).

Butalbital: Butalbital is a short- to intermediate-acting barbiturate. It is commonly used in combination with other drugs such as acetaminophen and caffeine to treat mild to moderate pain, migraines and tension headaches. Therapeutic levels range from 1 to 10 µ g/mL in whole blood. Butalbital has a volume of distribution of 1 L/kg. The half-life is about 30-40 hours. Warnings - may impair mental and/or physical ability required for the performance of potentially hazardous tasks (e.g., driving, operating heavy machinery). Toxic: >7.0 µg/mL Lethal: >13 µg/mL Blood/specimen distribution coefficient: muscle (0.66 ± 0.09), liver (2.22 ± 0.04), liver fluid (0.89 ± 0.23), kidney (0.98 ± 0.09), lung (0.87 ± 0.06), spleen (0.75 ± 0.03), brain (0.96 ± 0.07), and heart (0.91± 0.17)

Butanol (1-Butanol, N-Butanol): An alcohol. It is also produced postmortem, along with ethanol and other alcohols.

2-Butanol: 2-Butanol is an aliphatic alcohol, which is produced as a byproduct of specimen putrefaction.

Caffeine: Caffeine is a stimulant found in many dietary sources, particularly coffee, tea and cocoa. Plasma protein binding is 35%. Caffeine has a volume of distribution of 0.5 L/kg. The half-life is about 4 hours. Toxicity can occur following the ingestion of 5 to 50 g of caffeine; one cup of coffee or tea has about 100 mg caffeine. Lethal: >100 µg/mL

Carbamazepine: Carbamazepine is an anticonvulsant. It is structurally related to tricyclic antidepressants, but shares none of their pharmacological properties. Therapeutic levels range from 4 to 11 • g/mL in plasma. Plasma protein binding is 75%. Carbamazepine has a