



Medical Factual Report

Avenal, CA

HWY21FH003

(6 Pages)



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

November 8, 2021

Mary Pat McKay, MD, MPH
Chief Medical Officer

A. ACCIDENT: HWY21FH003; Avenal, CA

Date and time: January 1, 2021

Injuries: 9 fatal

B. GROUP IDENTIFICATION

No group was formed for the medical evaluation in this accident.

C. DETAILS OF INVESTIGATION

1. Purpose

This investigation was performed to evaluate the two involved drivers for medical conditions, the use of medications/illicit drugs, and the presence of toxins.

2. Methods

For the deceased drivers, the autopsy reports, toxicology findings, and the preliminary report were reviewed. Relevant regulation and medical literature were reviewed as appropriate.

SUV Driver

Autopsy

According to the autopsy issued by Fresno County Sheriff-Coroner, the 28 year old male SUV driver died as a result of blunt impact head and chest trauma. No significant natural disease was identified.

Toxicology

Toxicology testing performed by Central Valley Toxicology, Inc., identified ethanol at 0.21 gm/dl in peripheral blood. No other tested-for substances were identified.¹

Toxicology testing performed by the FAA's Forensic Sciences Laboratory identified ethanol at 0.188 gm/dl, delta-9-tetrahydrocannabinol (THC, the primary psychoactive component in cannabis) at 7.2 ng/ml along with its active metabolite 11-hydroxy-delta-9-THC (3.4 ng/ml) and its inactive metabolite carboxy-delta-9-THC (26.1 ng/ml) in peripheral blood. Because of a small sample size, testing was limited to carboxyhemoglobin, volatiles, and drugs of abuse by immunoassay. (See Attachment A.)

Pickup Truck Driver

Autopsy

According to the autopsy performed at the request of the County of Fresno's Sheriff-Coroner, the cause of death for the 34 year old female pickup truck driver was blunt impact abdominal trauma and the manner of death was accident. No significant natural disease was identified.

Toxicology Testing

Toxicology testing performed by Central Valley Toxicology, Inc., identified 0.05 gm/dl of ethanol and no other tested-for substances (includes fentanyl and common acidic, neutral and basic drugs). No tests for cannabis were performed.

Toxicology testing performed by the FAA's Forensic Sciences Laboratory identified 2.4 ng/ml of THC as well as 14 ng/ml of carboxy-delta-9-THC in femoral blood. Testing for the active metabolite, 11-hydroxy-delta-9-THC, was inconclusive. No ethanol was detected in this sample. Because of a small sample size, testing was limited to carboxyhemoglobin, volatiles, and drugs of abuse by immunoassay. (See Attachment B.)

Substance Descriptions

Ethanol is the intoxicant commonly found in beer, wine, and liquor. It acts as a central nervous system depressant. After ingestion, at low doses, it impairs judgment, psychomotor functioning, and vigilance; at higher doses it can cause coma and death. The effects of ethanol on drivers is well documented; at levels between 0.02 gm/dl and 0.08 gm/dl the crash risk rises slowly, but above 0.08 gm/dl it rises exponentially. After ingestion, ethanol is quickly distributed throughout the body's tissues and fluids fairly uniformly. The distribution pattern parallels the water content and blood supply of each

¹ Central Valley Toxicology Inc. tested for cocaine, opiates, amphetamines, barbiturates, benzodiazepines, methadone, fentanyl, tricyclic antidepressants, carisoprodol, and PCP.

organ. Ethanol may also be produced in body fluids and tissues after death by microbial activity.² In this case, ethanol levels vary significantly from one specimen to the next.

THC has mood-altering effects including euphoria, relaxed inhibitions, disorientation, image distortion, and psychosis. Significant performance impairments are usually observed for at least one to two hours following cannabis use, and residual effects have been reported up to 24 hours.³ THC is stored in fatty tissues and can be released back into the blood long after consumption. So, while the psychoactive effects may last a few hours, THC can be detected in the blood for days or weeks. Chronic cannabis using volunteers confined to a secure facility have been found to have THC and THC-COOH levels as high as 2 ng/ml and 14 ng/ml respectively 7 days after confinement without access to the drug, and level may be much higher when abstinence begins.⁴

D. SUMMARY OF MEDICAL FINDINGS

The 28 year old male SUV driver died of blunt force trauma. A local toxicology laboratory identified ethanol at 0.21 gm/dl. NTSB requested toxicology testing identified ethanol level of 0.188 gm/dl and a delta-9-THC level of 7.2 ng/ml along with an active metabolite (11-hydroxy-delta-9-THC) of 3.4 ng/ml and an inactive metabolite (carboxy-delta-9-THC) of 26.1 ng/ml in peripheral blood.

The 34 year old female pickup truck driver died of blunt force abdominal trauma. No significant natural disease was identified. Toxicology testing identified 0.05 gm/dl of ethanol in one specimen but none in another specimen. In addition, 2.4 ng/ml of THC as well as 14 ng/ml of carboxy-delta-9-THC was identified in femoral blood. Testing for the active metabolite, 11-hydroxy-delta-9-THC, was inconclusive.

² Federal Aviation Administration. Forensic Toxicology Drug Information. Ethanol. <http://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=60> Accessed 03/02/2021.

³ National Highway Traffic Safety Administration. Drugs and Human Performance Fact Sheets. Marijuana. <https://www.nhtsa.gov/document/drugs-and-human-performance-fact-sheets> Accessed 10/13/2021.

⁴ Bergamaschi M, Karschner E, Goodwin R, Scheidweiler K, Hirvonen J, Queiroz R, Huestis M. Impact of Prolonged Cannabinoid Excretion in Chronic Daily Cannabis Smokers' Blood on Per Se Drugged Driving Laws *Clinical Chemistry* 59:3 (2013): 519–526

FORENSIC TOXICOLOGY REPORT



FAA Civil Aerospace Medical Institute
 Bioaeronautical Sciences Research Branch, Forensic Sciences
 P.O. Box 25082, Oklahoma City, Oklahoma 73125
 Ph: 405-954-6254, Fax: 405-954-3705



March 4, 2021

NAME [REDACTED] SUV Driver
LOCATION Fresno,
 CA
DATE OF ACCIDENT 1/1/2021

CAMI # 202100006001
MODE Highway
DATE RECEIVED 1/12/2021

NTSB # HWY21IH003
N #
STATUS FATAL

SPECIMENS Blood (Periph.)

PUTREFACTION No

Screening tests employed

Blood (Periph.) - Carboxyhemoglobin (UV/VIS)
 Blood (Periph.) - Volatiles (HS GC/FID)
 Blood (Periph.) - Drugs of abuse (Immunoassay)

<u>Analyte</u>	<u>Result</u>	<u>Specimen</u>	<u>Instrument</u>
Carboxyhemoglobin	Not Detected	Blood (Periph.)	UV/VIS
Ethanol	188 (mg/dL, mg/hg)	Blood (Periph.)	HSGC/FID
Delta-9-THC	7.2 (ng/mL, ng/g)	Blood (Periph.)	LC/MS
Carboxy-Delta-9-THC	26.1 (ng/mL, ng/g)	Blood (Periph.)	LC/MS
11-Hydroxy-Delta-9-THC	3.4 (ng/mL, ng/g)	Blood (Periph.)	LC/MS

Note: Insufficient blood for General Drug screen by LCMS/GCMS.

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[REDACTED]
 Russell Lewis, Ph.D., F-ABFT
 Supervisor, Forensic Sciences
 Bioaeronautical Sci. Research Lab
 CAMI, FAA

This record may be releasable under the FOIA request 15 days after signature date, unless FOIA exemptions apply.
 Results listed in this report relate to tested specimen(s) only. See Forensic Toxicology web site for testing methodology and cutoffs as well as drug, FOIA, and contact information.

<http://www.faa.gov/go/toxlab>

FORENSIC TOXICOLOGY REPORT



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February 2, 2021

NAME [REDACTED] Pickup Truck Driver **CAMI #** 202100007001 **NTSB #** HWY21IH003
LOCATION Fresno, CA **MODE** Highway **N #**
DATE OF ACCIDENT 1/1/2021 **DATE RECEIVED** 1/12/2021 **STATUS** FATAL

SPECIMENS Blood (Femoral)

PUTREFACTION No

Screening tests employed

Blood (Femoral) - Carboxyhemoglobin (UV/VIS)
 Blood (Femoral) - Drugs of abuse (Immunoassay)
 Blood (Femoral) - Volatiles (HS GC/FID)

<u>Analyte</u>	<u>Result</u>	<u>Specimen</u>	<u>Instrument</u>
Carboxyhemoglobin	Not Detected	Blood (Femoral)	UV/VIS
Ethanol	Not Detected	Blood (Femoral)	HSGC/FID
Delta-9-THC	2.4 (ng/mL, ng/g)	Blood (Femoral)	LC/MS
Carboxy-Delta-9-THC	14 (ng/mL, ng/g)	Blood (Femoral)	LC/MS
11-Hydroxy-Delta-9-THC	Inconclusive	Blood (Femoral)	LC/MS

Note: Insufficient specimen for the testing of the General Drug Screen (LC/MS, GC/MS)

[REDACTED SIGNATURE] 2021.02.05 13:20:38 -06'00'

Russell Lewis, Ph.D., F-ABFT
 Supervisor, Forensic Sciences
 Bioaeronautical Sci. Research Lab
 CAMI, FAA

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