NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

October 29, 2015

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Chief Medical Officer

A. ACCIDENT: DCA15FR007

On April 3, 2015 at approximately 9:23 p.m. CDT in Pine Bluff, AR, a switch crew consisting of an operator and two ground persons employed by Railroad Switching Services (RSS) was shoving approximately 34 cars east from the switch lead into a track of the facility interchange yard, also known as a plant railroad yard. The switch crew was in the process of building an outbound block of cars, and was attempting to make a cut approximately 9 cars ahead of the locomotive. The operator received a radio command from the ground person to shove east three cars. The operator stopped after moving approximately three car lengths and after not receiving further radio commands from the ground person. The operator dismounted the locomotive and discovered one ground person fatally injured underneath the car where the cut was being made.

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 deceased ground person and operator involved in this accident for medical conditions, the use of any medications or illicit drugs, and the presence of any toxins.

2. Methods
   The operator's pre-employment medical evaluation record, toxicology results for both individuals, the autopsy report for the ground person, and the investigator's reports were reviewed.

Ground person

Autopsy

According to the autopsy performed by the Medical Examiner Division of the Arkansas State Crime Laboratory, the cause of death for the 35 year old male ground person was multiple traumatic injuries and the manner of death was accident. No significant natural disease was identified. Because of the degree of injury, no blood, urine, or vitreous was available for toxicology testing.

Toxicology

The deceased ground person had not been previously drug tested by his employer.

Post accident toxicology testing performed at Federal Aviation Administration's Bioaeronautical Research Laboratory detected hydrocodone and oxycodone (0.166 ug/ml) in bile; oxycodone (0.414 ug/g) and tetrahydrocannabinol carboxylic acid (0.0942 ug/g) were identified in liver.

Hydrocodone and oxycodone are Schedule II controlled substances available as narcotic medications by prescription, commonly marketed with the names Lortab, Vicodin, OxyContin, and Percocet.[1] Both hydrocodone and oxycodone carry the following warning, "May impair mental and/or physical ability required for the performance of potentially hazardous tasks (e.g., driving, operating heavy machinery)."[2,3] Tetrahydrocannabinol carboxylic acid is the primary metabolite of tetrahydrocannabinol, the psychoactive substance in marijuana.

Operator

Pre-Employment Health Evaluation

The operator had undergone a pre-employment occupational medical examination on 3/17/2015. The records reflect the operator was not asked about medications, drug use, or any other medical history. The health care provider did not report any abnormalities or diagnoses.

Toxicology Testing

The operator had a negative pre-employment urine drug test on 3/17/2015.

The operator underwent post accident urine drug testing at the request of the employer; the specimen was collected at 12:20 am on 4/4/2015. The test was limited to: amphetamine, methamphetamine, cocaine metabolites, opiates, marijuana metabolites, and phencyclidine. The operator's urine tested positive for amphetamine and methamphetamine. Amphetamine is

the major metabolite of methamphetamine. Confirmatory testing identified 909 ng/ml of amphetamine and 7613 ng/ml of methamphetamine in the operator's urine; both the *l*- and *d*- isomers of methamphetamine were present (6 and 94% respectively).

According to the National Highway Traffic Safety Administration, positive urine results for methamphetamine generally indicate use within 1-4 days. The rate of excretion into the urine is heavily influenced by urinary pH; between 30-54% of an oral dose is excreted in urine as unchanged methamphetamine and 10-23% as unchanged amphetamine.[4]

D. SUMMARY OF MEDICAL FINDINGS:

The deceased ground person, a 35 year old man, had no significant medical conditions identified by autopsy. The cause of death was multiple traumatic injuries and the manner of death was accident. Post accident toxicology testing was limited to bile and liver because other specimens were not available. Hydrocodone and oxycodone (0.166 ug/ml) were found in bile; oxycodone (0.414 ug/g) and tetrahydrocannabinol carboxylic acid (0.0942 ug/g) were identified in liver.

No significant diagnoses or abnormalities were identified in the train operator on his pre-employment health examination dated 3/17/2015. Post accident urine drug testing performed at 12:20 am on 4/4/2015 identified methamphetamine and amphetamine in his urine. 94% of the methamphetamine was determined to be the *d*-isomer.

References

[1] Drug Enforcement Administration. Controlled Substances, alphabetical listing (July 2015). http://www.deadiversion.usdoj.gov/schedules/orangebook/c_cs_alpha.pdf Accessed 10/26/2015

[2] Federal Aviation Administration. CAMI Toxicology drug information. Oxycodone. http://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=94 Accessed 10/26/2015.

[3] Federal Aviation Administration. CAMI Toxicology drug information. Hydrocodone. http://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=73 Accessed 10/26/2015.

[4] National Highway Traffic Safety Administration. Drugs and Performance Fact Sheets: Methamphetamine (and amphetamine). http://www.nhtsa.gov/people/injury/research/job185drugs/methamphetamine.htm Accessed 10/26/2015.