Tainted Alcohol Kills 19 in Costa Rica. Did It Kill in Dominican Republic?

By Alex Berezow, PhD — July 22, 2019

Last month, we discussed the risks associated with traveling to the Dominican Republic [2], where nine Americans died under mysterious circumstances. Anecdotal evidence suggested poisoning because some witnesses claimed that their loved ones fell ill after drinking from a resort mini-bar. The relevant question is, "What sort of poisoning and why?"

Now, a recent development should point investigators in a specific direction. CNN just reported [3] that 19 people have died in Costa Rica from drinking alcohol adulterated with poisonous methanol.

Why Is Alcohol Adulterated with Methanol?

There are three different products that we colloquially refer to as "alcohol" but only of them is drinkable: Methanol (wood alcohol), isopropyl alcohol or isopropanol (rubbing alcohol), and ethanol (booze).

Bootleggers, in the United States anyway, sometimes adulterate their products with deadly methanol. The goal isn't to kill their customers. Instead, the goal is to make their booze as cheaply as possible. If a bootlegger spikes his drink with ethanol that he purchased cheaply from a hardware store, he may not know (or he may know but doesn't care) that the ethanol is purposefully contaminated by the manufacturer with methanol in order to make it undrinkable. Giving this to a customer may inadvertently kill him.
The chemical structures of methanol and ethanol are quite similar but for one small (yet hugely significant) difference: The presence of an additional CH₂ group in ethanol. (See image.)

This tiny difference has enormous biochemical consequences inside the body. While tasty ethanol is metabolized into acetaldehyde and acetic acid (vinegar), methanol is metabolized into formaldehyde and formic acid. These compounds can cause blindness, kidney damage, metabolic acidosis, and death [4].

That is why methanol is potentially deadly at a smaller dose than ethanol. According to the chemistry website Compound Interest [5], 13 shots (1 shot = 45 mL) of vodka (40% alcohol) is lethal to the average 165-pound person if consumed all at once. Doing the math, that's 234 mL (just shy of 8 ounces) of pure ethanol. By comparison, 56.2 grams of pure methanol [6] would probably kill the average person, which is about 71 mL (~2.5 ounces).

**The Connection to Dominican Republic**

A lot of countries don't have the same safety standards that we have come to expect in the United States. According to the aforementioned CNN article, several **brands** of alcohol in Costa Rica are tainted with methanol. So, it's not just bootleggers but actual companies that are responsible.

Could something similar explain the deaths of Americans in the Dominican Republic? It's certainly a good bet.

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**Links**
[1] https://americanhistory.si.edu/american-enterprise-exhibition/corporate-era/bootlegging