

The Strange Case of Mole Airlines, Flight 1023

Mole Airlines, Flight 1023



At 6:02 AM, you and your team of medical examiners are called to the scene of a small airplane crash in a remote location. The plane shows evidence of a pre-crash explosion. Eight victims are found at the scene, but none are identifiable by witnesses, dental records were not found, and DNA evidence takes too long to process. Evidence shows that one victim was murdered prior to the plane crash. The flight manifest shows the names and some information about the victims. You must use the available tools and information to identify each victim. You must also solve the murder mystery.

The Plane

A section of the plane has been blown apart by an explosion. It appears as if the explosion happened before the crash.

Residue from the explosion site shows the following elemental analysis: 37.01% carbon; 2.22% hydrogen; 18.5% nitrogen; 42.27% oxygen

Passenger Manifest

The passenger manifest lists the following passengers who boarded the flight at takeoff.

Amadeo Oldere - Pilot with a secret heart condition

Norm Anderson - Suspected terrorist

Archie Starr - Retired teacher addicted to diet drinks

Lisa Johnson - Unemployed, depressed, environmental engineer

Bill (Cadillac) Jackson - Suspected drug dealer

Bob (Reno) Henderson – Pro athlete **just suspended** for drug use

Jim LeClaire – Baker

Connie Majors – Pharmacist

Dimatracine (antidepressant)	C₁₀H₁₃N
Acetaminophen (over the counter pain killer)	C₈H₉NO₂
Nitroglycerin (explosive or heart medication)	C₃H₅N₃O₉
Thiobromine (chocolate)	C₇H₈N₄O₂
Vanillin (vanilla)	C₈H₈O₃
Codeine (prescription pain killer)	C₁₈H₂₁NO₃
Trinitrotoluene (TNT) Explosive (dynamite)	C₇H₅N₃O₆
Curare (poison)	C₄₀H₄₄N₄O
Strychnine (Rat poison)	C₂₁H₂₂N₂O₂
Cocaine (Narcotic drug)	C₁₇H₂₄NO₄
Aspartame (Artificial sweetener)	C₁₄H₁₈N₂O₅
Aspirin (over the counter pain killer)	C₉H₈O₄

The Victims

The following table presents the information obtained from laboratory tests of all of the victims. Remember that the bodies were not identifiable, so hopefully we can gain some clues as to the passengers' identity based on this laboratory data.

Victim # and Name	Sample Location	Percent Composition				Compound Name/Formula
		Carbon	Hydrogen	Oxygen	Nitrogen	
1	Blood sample	67.31%	6.98%	21.10%	4.62%	
2	On face of victim	63.15%	5.30%	31.55%	-	
	Stomach contents	46.66%	4.48%	17.76%	31.1%	
3	In tablets found in victim's pocket	72.15%	7.08%	16.03%	4.68%	
4	In pocket and in blood sample	15.87%	2.22%	63.41%	18.15%	
5	Blood sample	75.42%	6.63%	9.57%	8.38%	
	Clothing	37.01%	2.22%	42.27%	18.5%	
6	Pocket	57.14%	6.16%	27.18%	9.52%	
7	Pocket	80.48%	7.45%	2.68%	9.39%	
	Pocket	81.58%	8.90%	-	9.52%	
8	Pocket	60.00%	4.48%	35.53%	-	
	Pocket	63.56%	6.00%	21.17%	9.27%	

When you are finished:

Write a **report** for your boss at the NTSA. Think logically about the situation and the information you've been given. In your report,

- Describe the situation and give any relevant background information
- Explain what you did. You don't have to go through every substance you analyzed, but give one example and explain the process you went through to identify it.
- Identify each victim and match their number with their name from the passenger manifest.
- Explain who was murdered prior to the crash and by whom.
- Give your best explanation who and/or what caused the explosion that brought down the plane.