The Strange Case of Mole Airlines Flight 1023

Scene of the Crash
At 6:02 AM you and your team of medical examiners are called to the scene of a plane crash. You find evidence of a pre-crash explosion. At the site of the explosion a material has been found. Subsequent chemical analysis shows:

C 37.01%   H 2.22%   N 18.5%   O 42.27%

The passengers must be identified by the substances found in their belongings or in their bodies. Upon further investigation one passenger was suspected of having been murdered before the crash: the time of death was approximated at one hour prior to the crash.

Your Job
1. Use the the Percent Composition Data in Table 1 to determine formulas for the compounds found with or in the passengers. Match these formulas with the identity of each compound listed in Table 2.
2. Use the Personal Data in Table 3 to make a probable identification of each passenger. Record the identification in Table 4.
3. Use your information to figure out who was murdered and who is the most probable murderer. Record your results in Table 4.

Table 1: Percent Composition Data

Passenger	Compound Analysis				Location
	C	H	N	O	
1	67.31	6.98	4.62	21.10	blood
2	63.15	5.30	—	31.55	face
	46.66	4.48	31.1	17.76	stomach
3	72.15	7.08	4.68	16.03	pockets (2000 tablets)
4	15.87	2.22	18.15	63.41	blood and pockets
5	75.42	6.63	8.38	9.57	blood
	37.01	2.22	18.5	42.27	pockets
6	57.14	6.16	9.52	27.18	pockets
7	75.42	6.63	8.38	9.57	pockets
	81.58	8.90	9.52	—	pockets
8	60.00	4.48	—	35.53	pockets
	63.56	6.00	9.27	21.17	pockets

Table 2: Possible Compounds

Compound	Formula	Notes
codeine	$C_{18}H_{21}NO_3$	painkiller, prescription-controlled
cocaine	$C_{17}H_{21}NO_4$	narcotic, illegal
aspirin	$C_9H_8O_4$	pain killer
aspartame	$C_{14}H_{18}N_2O_5$	artificial sweetener
vanilla	$C_8H_8O_3$	flavoring
trinitrotoluene	$C_7H_5N_3O_6$	explosive (TNT - dynamite)
nitroglycerine	$C_3H_5N_3O_9$	explosive, heart medication
curare	$C_{40}H_{44}N_4O$	poison
theobromine	$C_7H_8N_4O_2$	chocolate (flavoring)
strychnine	$C_{21}H_{22}N_2O_2$	rat poison
dimetacrine	$C_{10}H_{13}N$	prescription drug, antidepressant
acetaminophen	$C_8H_9NO_2$	painkiller (Tylenol)

Table 3: Personal Data

Identity	Notes
Amadeo Oldere	has a heart condition
Connie Majors	pharmacist
Jim LeClaire	baker
Archie Starr	teacher, addicted to sugar-free drinks
Bob (Reno) Henderson	professional athlete, just suspended for drug violations
Lisa Johnson	environmental engineer, severely depressed
Bill (Cadillac) Jackson	suspected drug dealer
Norm Anderson	suspected leader of a terrorist organization