

Who Killed Tony DeMoy???

Synopsis

Tony DeMoy was a chemist that worked for the EPA. He investigated waste disposal practices of various companies to ensure they were following government regulations for hazardous waste. He was found dead in his lab. Your task is to identify who and what killed Tony DeMoy using your stoichiometry calculations and the Autopsy Results. You may only look at the Autopsy results once you have completed the calculations and had them stamped. **SHOW ALL YOUR WORK**

Victim Data

- Tony DeMoy, 45 years old, Environmentalist
- Several signs around the death site that suggest foul play
- Wife has a proven alibi
- Four possible causes of his untimely death suggested by his wife

Crime Scene Evidence

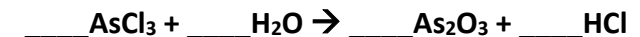
- 1) Robert Ferrante is a chemist who worked for a company that was being investigated by Tony DeMoy on behalf of the EPA. Tony and his team were about to file their report on the waste disposal practices at the company Robert worked for. Robert says that he did get a copy of the report from Tony, but that there was nothing in the report that would damage his reputation, or the reputation of the company. It was found that Robert was missing 1.6 grams of methane (CH₄) from his lab. He says that he just left the Bunsen burner on for a second one day and that is why the methane is missing. Could he have used the equation below to make enough Hydrogen Cyanide to kill Tony?



- 2) Tye Lenol is a photographer who owns his own developing studio. In Tye's developing studio the investigators found pictures of chemical waste that was being poured into a river. The investigators also found that 7.8 grams of C₆H₇NO was missing from his inventory. Tye said that he donated that amount to a local friend to help develop some pictures. The crime lab has informed us that the missing chemical can be used to produce acetaminophen (C₈H₉NO₂). Did Tye Lenol poison Tony with acetaminophen? Use the equation below to find out how much acetaminophen he could have made with 7.8 grams of the missing chemical.



- 3) Jonathan Brewster is the Water Technician for a local company that Tony was investigating last week. Tony's lab notes showed that he was testing a waste sample from the company for high levels of a toxic substance that the company has been cited for in the past. In Jonathan's lab it was found that he uses arsenic chloride for his water treatment procedures, which is also used to produce the poison arsenic oxide. Could Jonathan have used the 0.231g of missing arsenic chloride to produce enough arsenic oxide to kill Tony with?



- 4) Professor Socrates is a botanist at the local university. He wrote an angry letter to Tony about the environmental impacts local companies were having on the Muir Woods area. He was not happy with Tony's lack of enforcement on the companies in the area. Could Professor Socrates have used his knowledge of hemlock to produce enough to kill Tony? It was found that 0.5 gram of ammonia (NH₃) was missing from his manure inventory in his garden shed.



Calculations

Using your knowledge of Stoichiometry, calculate the amount of poison each suspect had the ability to make to causes the death to Tony DeMoy. Show all work in order to have your findings hold up in court during the trial.

1. Suspect: *Robert Ferrante*

Poison: _____ Amount of poison produced: _____

2. Suspect: *Tye Lenol*

Poison: _____ Amount of poison produced: _____

3. Suspect: *Jonathon Brewster*

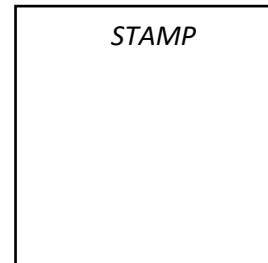
Poison: _____ Amount of poison produced: _____

4. Suspect: *Socrates*

Poison: _____ Amount of poison produced: _____

STOP!

You must get your calculations checked by your teacher before you can proceed! You need a stamp approving your calculations before you can keep going.



Autopsy Results

There were lethal levels of the compound _____ found during the autopsy.

Conclusion

During the autopsy, Tony DeMoy was found to have lethal levels of _____ in his system. This compound is commonly used for _____.

Based on this information we determined that _____ was the one who murdered Tony DeMoy because (explain the motive): _____

STOP!

You must get your conclusion checked by your teacher before you can proceed! You need a stamp approving your calculations before you can finalize your findings by gluing this paper into your notebook.

