Rowan College at Burlington County

CHE 241

Experiment 5 – Forensic Investigation

As an expert in chemical toxicology, you are called to work on the following case:

A member of a famous English rock band was found in a coma in his dressing room after a gig. It was neither an attempted suicide nor a recreational drug overdose, but rather an intentional poisoning by a disgruntled fan unhappy with the musical direction the band was taking who put poison into the water bottle of the victim. The fan unfortunately committed suicide before the poison could be identified. However, a bottle of the poison was found near the comatose guitarist as well as the alleged

This is where you come in. If the poison can be identified and quantified then an antidote can be administered. In the fan's room were found samples of 3 poisons in liquid form. It is known that each of the poisons is undetectable in water by itself but since it must be pre-dissolved in one of the following organic solvents. If you can identify the solvent then the poison can be identified. The solvents are acetone, ethanol, and 2-propanol.

You have two samples. The first is a small sample of the actual poison, which is dissolved in one of the aforementioned solvents. You also have water bottle containing an undetermined amount of one of the solvent/poisons. If necessary, you have access to known samples of each of the 3 solvents.
First, identify which of the three solvents from the bottle of poison/solvent. Next, quantify the amount (% by volume) of that solvent in the water bottle. With that information, a suitable antidote can be formulated. For equipment you have:

- Refractometer
- IR spectrophotometer
- Gas chromatograph

Please develop and propose a planned method on how to proceed. Have the plan approved before you begin any lab work.

**The solvents are not dissolved in water, but in hexanes. When a calibration curve is created, the solvent must be dissolved in hexanes.

In making a calibration curve, great care must be taken to fully mix the solutions. The R^2 value should be close to 1.0.

CJF

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