

Reading for understanding – teacher notes



Education in Chemistry

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rsc.li/EiC517-know-your-poison

1. Explain, in terms of the separation process, why chromatography is a good method for analysing drugs.

Molecules 'stick' to the solid columns depending on their structure and so move at different speeds through the column

OR (if pupils have prior understanding) Chromatography works due to the differing solubilities of samples in the mobile and stationary phases. These can be fine-tuned to give excellent separations.

2. Why is chromatography not particularly useful for carrying out analysis at festivals?

The equipment is heavy, difficult to move, and takes hours to set up. If disturbed, the equipment needs retuning to its original setup. It is also slow.

3. Give three reasons why the infrared spectrometers used by the Loop were particularly good for use at festivals.

- *Small, only briefcase sized.*
- *The sample needs no preparation, it can simply be crushed and placed on the testing stage*
- *Only requires a small amount of sample*
- *Fast*

4. Give one disadvantage of using infrared spectroscopy for analysing drugs at festivals.

The technique relies on database matching. New drugs or complex mixtures might not be in the database.

5. Explain how the reagent tests Guy designed can help identify drug samples.

The liquids are added to the drug samples. They change colour according to the functional groups in the molecule. The colour change is compared to a reference chart that lists the drug compounds.

6. List some substances used as cutting agents in the drug samples the teams analyse.

Sugar, creatine, benzocaine, cheaper drugs including novel psychoactive substances (NPS) (eg flephedrone)

7. Discuss the role of dosage in the dangers posed by legal and illegal drugs. Use an example from the article.

High doses of drugs are harmful or lethal. Even legal drugs can cause harm if the dose is too high. For example, 1–2 mg of benzocaine is a suitable dose but 50–100 mg can cause internal bleeding, and two paracetamol will take away a headache but 32 will kill you.