Reading for understanding – teacher notes

***Education in Chemistry***September 2017<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 stationery phases. These can be fine-tuned to give excellent separations.*

1. 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*.

1. 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*
1. 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.*

1. 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.*

1. 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)*

1. 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.*