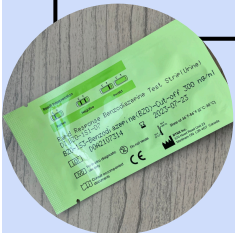




TECHNOLOGY BENEFITS AND LIMITATIONS

FENTANYL TEST STRIPS

Benefits	Limitations
<ul style="list-style-type: none">• Easy to use• Portable• Low cost• Very sensitive; able to detect even trace amounts of fentanyl in a sample• Can detect fentanyl that isn't picked up by FTIR	<ul style="list-style-type: none">• Can't tell how much fentanyl is in a sample (only yes/no)• Doesn't pick up all analogues (but picks up many)• False positives can occur if not enough water or too much sample is used



BENZO TEST STRIPS

Benefits	Limitations
<ul style="list-style-type: none">• Positive results are reliable• Portable• Low cost• Sensitive; able to detect a small amount of certain benzos in a sample	<ul style="list-style-type: none">• Can't tell how much benzo is present (only yes/no)• Doesn't tell which benzo is present• Doesn't pick up all benzos or benzo analogues; etizolam has a low reactivity with strips and rarely reacts• Concentration needed for accurate results varies• High false-negative rate• Can't be given out due to limitations in reliability

RAMAN SPECTROMETER



Benefits

- Quick and easy to use
- Relatively affordable
- Good for identifying the main ingredient in a sample
- No/minimal sample prep needed
- Portable
- Doesn't destroy sample
- Can be used through baggies
- Capable of trace detection through SERS (an additional sample preparation technique)

Limitations

- Limited sensitivity, can't always detect substances in low quantities (below 5%)
- Difficulty interpreting samples that are fluorescent (coloured samples)
- Difficult/limited possibility of running plant-based samples and LSD blotters
- Can't detect substances that aren't in the library

FTIR SPECTROMETER



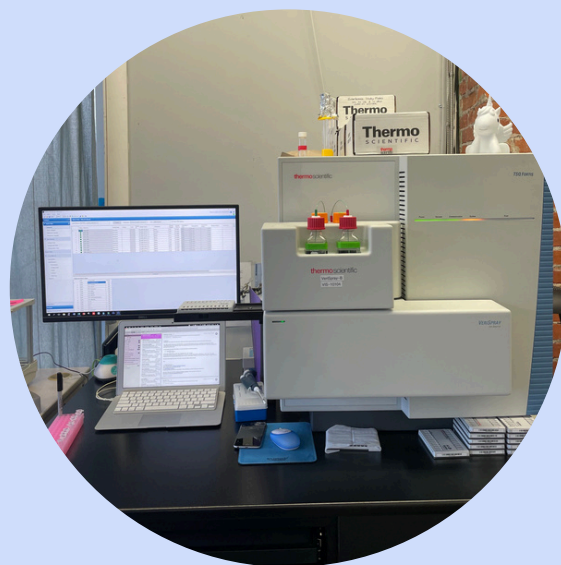
Benefits

- Portable
- Relatively fast
- Doesn't destroy sample
- Able to detect many chemicals
- Relatively inexpensive (for a spectrometer)
- No/minimal sample prep needed
- Commonly used for drug checking across the world
- Great at detecting bulk cutting agents
- Able to provide estimates of quantification

Limitations

- Detection threshold of 5% (can't detect something that makes up less than 5% of a sample)
- Can't detect substances that aren't in the library
- Difficult/limited possibility of running plant-based samples and LSD blotters
- Scans need to be interpreted by a trained technician

PAPER SPRAY MASS SPECTROMETER



Benefits	Limitations
<ul style="list-style-type: none">• Highly sensitive and able to detect trace amounts of chemicals present in a substance• Able to provide precise quantification information (% concentrations)• Gold-standard for chemical analysis, can be used for confirmatory analysis (being sure that what you are seeing is correct)	<ul style="list-style-type: none">• Sensitive to temperature and environmental changes• Requires very precise and particular sample preparation before substances can be analyzed with the machine• Requires extensive training to operate• Primarily relies on a target list of substances to quantify chemicals• It could miss bulk cutting agents and novel or uncommon substances that are not on our target list• Requires at least one person with extensive, specialized knowledge of mass spectrometry to set up and maintain proper functioning• Sample is destroyed in the process• Very expensive• Not portable