TECHNOLOGY BENEFITS AND LIMITATIONS

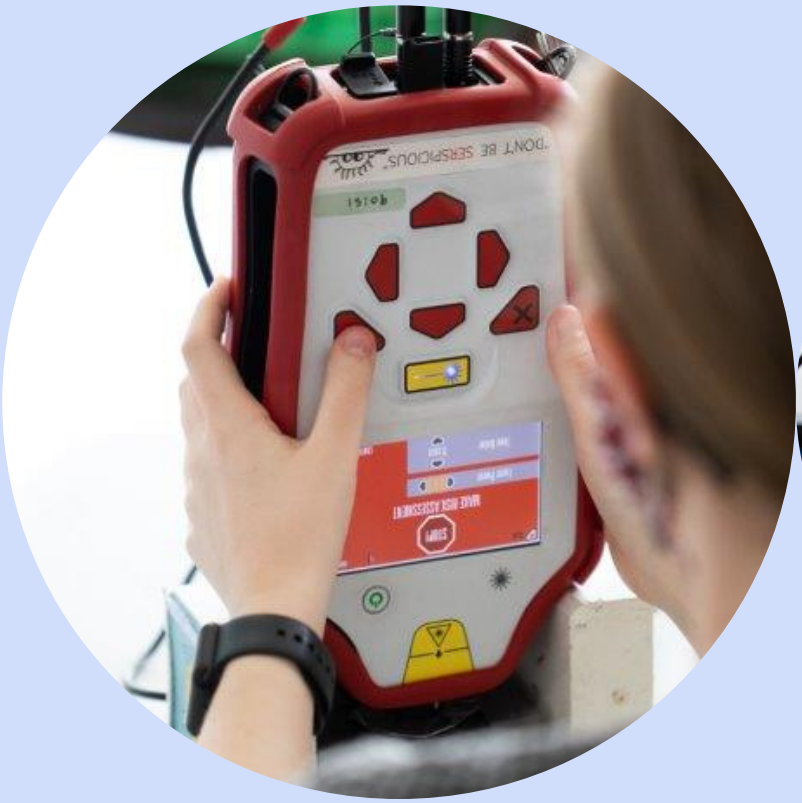
FENTANYL TEST STRIPS

Benefits	Limitations
• 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	• 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
• Positive results are reliable • Portable • Low cost • Sensitive; able to detect a small amount of certain benzos in a sample	• 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

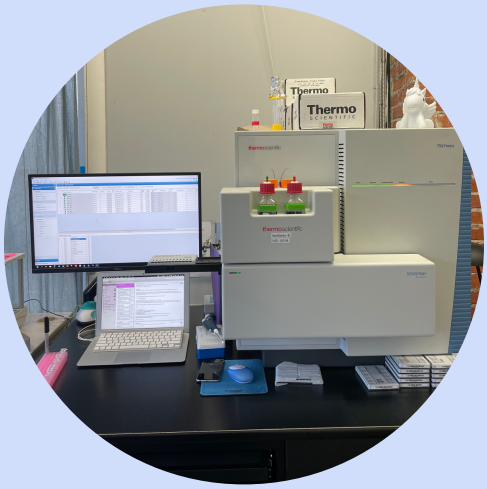


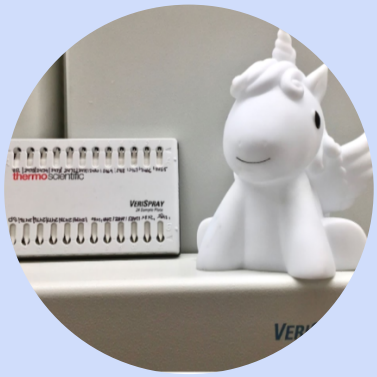
Benefits	Limitations
• Quick and easy to use • Relatively affordable • Good for identifying the • main ingredient in a sample • No/minimal sample • prep needed • Portable • Doesn't destroy sample • Can be used through baggies • Capable of trace detection through SERS (an additional sample preparation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