



# Oral Fluid Roadside Analysis – Pilot Program Phase 2

Michigan State Police, January 2021, Oral fluid Roadside Analysis, Pilot Program – Phase 2

## OVERVIEW

In a continuing effort to establish whether oral fluid screening is an effective and practical matrix for testing drivers for drugs, Michigan State Police recently evaluated the SoToxa™ Oral Fluid Mobile Test System as a tool for roadside screening.

Police initially reported on the results from phase 1 of the oral fluid roadside pilot program in 2019. However, due to small data set, Michigan State Police expanded the study to collect further data between October 2019 and September 2020 (Phase 2).

Similar to Phase 1 of the program, if impairment of a driver was suspected, an oral fluid sample was collected with the SoToxa Oral Fluid Mobile Test System to screen for six of the most common drug classes (Table 1).

DRUG GROUP	TARGET COMPOUND	CUTOFF (NG/ML)
Amphetamine (AMP)	(S) Amphetamine	50
Benzodiazepine (BZO)	Temazepam	20
Cannabis (THC)	Delta-9-THC	25
Cocaine (COC)	Benzoyllecgonine	30
Methamphetamine (MAMP)	(S) Methamphetamine	50
Opiates (OPI)	Morphine	40

Table 1. SoToxa Oral Fluid Mobile Test System: Drug groups and their respective cutoffs

As well as a routine blood draw for confirmation, a second voluntary sample was collected using the Quantisal™ Oral Fluid Collection Device, which was sent to a commercial testing laboratory for analysis in line with the drug groups set out in Table 1.

## KEY FINDINGS

In total 693 incidents were reported throughout the test phase that resulted in 661 oral fluid roadside tests, 547 oral fluid confirmation samples as well as 632 blood confirmation results. The prevalence of positive results in the initial roadside screening is depicted in Figure 1.

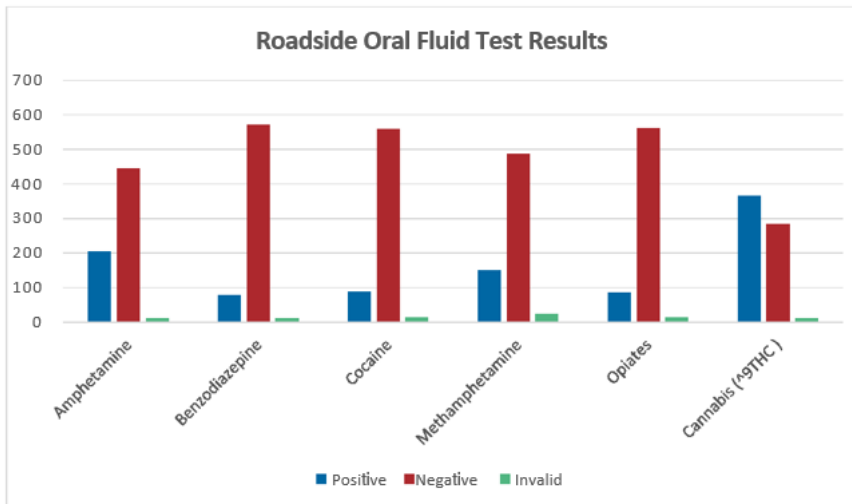


Figure 1. Results by drug group of tests conducted at the roadside using the SoToxa Oral Fluid Mobile Test System.

The accuracy of the SoToxa Oral Fluid Mobile Analyser ranged between 87% - 96% when compared to the voluntary oral fluid confirmation sample as shown in Table 2. The cutoffs for the SoToxa Oral Fluid Mobile Test System are generally set at a higher level than those for the voluntary confirmation. However, as stated in this report, for benzodiazepines the cutoff for the oral fluid confirmation was set higher than that for the SoToxa Oral Fluid Mobile Test System. Subsequently a result that may have screened positive at the roadside, may be below the confirmation cutoff.

	AMP	BZO	THC	COC	OPI	MAMP
	ESTIMATE	ESTIMATE	ESTIMATE	ESTIMATE	ESTIMATE	ESTIMATE
<b>Sensitivity</b>	81.80%	58.70%	84.20%	71.00%	85.50%	89.70%
<b>Specificity</b>	89.20%	92.30%	97.20%	97.70%	97.40%	98.00%
<b>Accuracy</b>	87.00%	89.40%	88.70%	93.00%	95.80%	96.00%

Table 2. Reported sensitivity, specificity and accuracy of the SoToxa Oral Fluid Mobile Test System when compared to the voluntary oral fluid confirmation sample collected with the Quantisal Oral Fluid Collection Device.

In comparison, the accuracy when compared to the blood draw analysis ranged between 82.60% and 95.20% across all drug groups (Table 3). The cutoff for benzodiazepines in blood is not stated within the report and with a wide range of benzodiazepines available, the report also does not clarify which benzodiazepines were confirmed for in blood.

When interpreting these results, it is important to consider all variables within the study including the time between the screening and collection of the confirmatory sample, which was not provided in the report. As stated by the authors, the secondary confirmation sample could have been collected several hours after the initial oral fluid screen. During this time, drugs in the blood will continue to dissipate in the body which may cause a different confirmation result from the initial screen.

During the analysis of the blood sample, any detected metabolites in the six drug groups listed in table 1 resulted in the blood sample being reported as positive.

	AMP	BZO	THC	COC	OPI	MAMP
	ESTIMATE	ESTIMATE	ESTIMATE	ESTIMATE	ESTIMATE	ESTIMATE
<b>Sensitivity</b>	83.80%	33.70%	85.80%	90.80%	93.50%	95.30%
<b>Specificity</b>	86.50%	91.10%	92.10%	94.90%	90.60%	95.20%
<b>Accuracy</b>	85.70%	82.60%	87.90%	94.40%	90.70%	95.20%

Table 3. Reported sensitivity, specificity and accuracy of the SoToxa Oral Fluid Mobile Test System when compared to the blood confirmation results.

## CONCLUSION

The authors conclude that oral fluid testing is accurate for preliminary roadside testing. Furthermore, the authors concluded that the SoToxa Oral Fluid Mobile Test System is easy to use, requires minimum training and provides a result within 5 minutes after collection of the sample.