


1

## New York State Police's Evidential Oral Fluid Testing Program

Maine Oral Fluid Testing Work Group  
August 25, 2025

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1

2

## Specimens for Drug Impaired Driving Testing





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3

## Blood

Advantages

Disadvantages

Recent Use


Requires medically  
trained personnel

Detect parent/active  
compounds

Delays may result in  
active compounds being  
undetected

Concentration may  
assist in interpretation

Legal challenges to it  
being too invasive



3

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## Urine


Advantages

Disadvantages

Ease of  
collection

Limited  
interpretation

Easily  
adulterated



4

5

## Oral Fluid

Advantages

Disadvantages


Recent use, similar  
detection time to blood

Limited interpretation  
of levels

Detect parent/active  
compounds

Sensitivity for some drugs

Ease of collection




5

6

## Oral Fluid Collection Benefits

- Most accessible biological fluid
- Easy, rapid collection
- Minimally invasive
- Observed; gender neutral
- No need for medical personnel
- Can be taken proximate to the traffic stop
- Difficult to adulterate



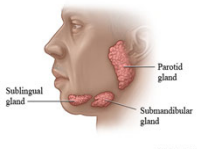
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### What is Oral Fluid?

Mixture of saliva, oral mucosal transudates, and residues of ingested products

- Saliva
  - liquid from the salivary glands
  - 99% water and 1% protein and salts
- Production
  - 500-1500 mL/day (~2-6 cups)
  - rate ~0.3-0.4 mL/min
- Oral mucosal transudates
  - Fluids from the capillaries beneath the lining of the cheeks and lips



Sublingual gland  
Submandibular gland  
Parotid gland



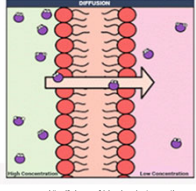
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### How do drugs get into oral fluid?

Simple passive diffusion from blood


- Once blood gets to the salivary glands, drugs rapidly transfer to the oral fluid
- Parent drug and some metabolites
- Basic drugs transfer well to OF (e.g. cocaine, amphetamines, pain meds)
- Acidic protein bound drugs do not transfer well to OF (e.g. benzodiazepines)



DIFFUSION

High Concentration  
Low Concentration

<https://byjus.com/biology/passive-transport/>



8

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### How do drugs get into oral fluid?

Oral cavity deposition

- Smoked, vaped, snorted, chewed, sublingual, etc
- Typically cleared within a few hours



NBC News




Chemistry World



9

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### Why did we consider oral fluid for NY?



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11


### Blood Draw Requirements

**NYS Vehicle & Traffic Law (VTL) 1194.4**

(a) Persons authorized to withdraw blood; immunity, testimony.

(1) At the request of a police officer, the following persons may withdraw blood for the purpose of determining the alcoholic or drug content therein:

(i) a physician, a registered professional nurse, a registered physician assistant, a certified nurse practitioner, or an advanced emergency medical technician as certified by the department of health; or



11

12


### Blood Draw Requirements

**NYS Vehicle & Traffic Law (VTL) 1194.4**

(a) Persons authorized to withdraw blood; immunity, testimony.

(1) At the request of a police officer, the following persons may withdraw blood for the purpose of determining the alcoholic or drug content therein:

(ii) under the supervision and at the direction of a physician, registered physician assistant or certified nurse practitioner acting within his or her lawful scope of practice, or upon the express consent of the person eighteen years of age or older from whom such blood is to be withdrawn: a clinical laboratory technician or clinical laboratory technologist licensed ...; a phlebotomist; or a medical laboratory technician or medical technologist employed by a clinical laboratory approved under ....



12

13

Blood Draw - Search Warrants

NYS Vehicle & Traffic Law (VTL) 1194.3

Compulsory Chemical Tests

(b) Upon refusal by any person to submit to a chemical test ..., the test shall not be given unless a police officer or a district attorney, ... requests and obtains a court order to compel a person to submit to a chemical test ... upon a finding of reasonable cause to believe that:

(1) such person was the operator of a motor vehicle and in the course of such operation a person other than the operator was killed or suffered serious physical injury

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13

14

Blood Draw Challenges

Medical Facilities

Who pays for the blood draw

Staff not compensated for testimony

Delays in access to authorized personnel

Hospitals refusing

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14

15

Blood Draw – Collection Time

	Blood Collection Time
Mean	3:12
Median	3:12
Min	0:33
Max	6:45
N	140

Incident → Blood collection during oral fluid pilot program

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State Police

15

16

Chemical Test Refusals

TSLED Chemical Test Refusals

Year	% Refused ALCOHOL	% Refused DRUG
2013	18.0%	16.0%
2014	18.5%	15.0%
2015	19.0%	16.0%
2016	18.5%	17.0%
2017	19.0%	17.0%
2018	20.0%	17.0%
2019	21.0%	18.0%
2020	22.0%	24.0%
2021	23.0%	26.0%
2022	24.0%	27.0%
2023	25.0%	26.0%

Compiled by ITSMR, Feb 2024  
Data source: TSLED  
TSLED covers all areas of the State, except New York City  
2023 numbers are preliminary

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16

17

DRE - Chemical Test Refusals

DRE Chemical Test Refusal Rate

Year	Percent Refused
2016	14.0%
2017	13.0%
2018	12.0%
2019	14.0%
2020	18.0%
2021	21.0%
2022	24.0%
2023	20.0%

Compiled by ITSMR, Feb 2024  
Data source: NYS DRE Database

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17

18

OF Pilot Program – Reasons for no blood collection

Refusals (9)

Couldn't draw blood or QNS (10)

Blood draw personnel unavailable (1)

Not requested (5)

NEW YORK STATE


State Police

18

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### Potential Benefits of Oral Fluid for NY


- Earlier collection of toxicology specimen
- No medical personnel needed for collection (or court)
- Better cooperation of subjects
- Less time for officer



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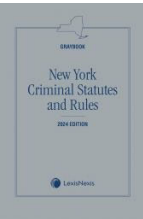
But can we do it in  
NY???




20

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### Legal Considerations - Oral Fluid in NYS






21

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### NYS Vehicle & Traffic Law

**VTL1194.2 Chemical Tests**

(a) When authorized. Any person who operates a motor vehicle in this state shall be deemed to have given consent to a chemical test of one or more of the following: breath, blood, urine, or **saliva**...



22

23

### Blood Draw Requirements


**NYS Vehicle & Traffic Law (VTL) 1194.4**

(a) Persons authorized to withdraw blood; immunity, testimony.

(1) At the request of a police officer, the following persons may withdraw blood for the purpose of determining the alcoholic or drug content therein:

(ii) ....

This limitation shall not apply to the taking of a urine, saliva or breath specimen.



23


24

### NYS Dept of Health Rules & Regs

**10 NYCRR 59.1 Definitions**

(k) *Saliva* means oral fluid

VTL 1194.4.c Rules and regulations. The department of health shall issue and file rules and regulations ...



24

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Case Law in NY

No specific impaired driving citations yet





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26


Case Law in NY

AAA Use of Oral Fluid to Detect Drugged Drivers: A Toolkit

Refers to an unpublished NY County Supreme Court case from 2007, *People v. Gonzales*, SCI #1092/06 (included in the appendix)

Oral fluid test could be relied upon in probation revocation.

*“Based upon the uncontradicted evidence presented, I find that the oral swab test performed on the defendant has been accepted by the relevant scientific community and was properly performed.”*




26

27

Oral Fluid Drug Testing – New & Novel?

- Generally accepted in the relevant scientific community
- Analytical techniques are the same ones currently used to test for drugs in blood and urine
- NYSP testing methods meet ANSI/ASB standards for forensic toxicology testing




27

28

Oral Fluid Drug Testing – New & Novel?


- Drug testing in oral fluid used in various sectors including federal workplace drug testing, pain management, impaired driving
- Scientific literature shows it is an appropriate alternative to blood (good correlation)
- Has been included in NY Vehicle & Traffic Law for decades



28

29

So how are we going to do it in NY???



29

30

Evidential Oral Fluid Testing

Collected onsite, no medical personnel



Sent to a forensic laboratory for testing





30

31

### Quantisal™ Collection Device



The image shows the packaging for the Quantisal collection device, which is a white plastic bag with the brand name 'Quantisal' and '3.6mL' printed on it. Next to the bag are the two components of the device: a red cap and a white collection tube with a blue tip.



31

32

### Quantisal™ Collection Process



The diagram illustrates the five steps of the Quantisal collection process: 1. Opening the device, 2. Inserting the pod into the mouth, 3. Holding the device, 4. Sipping, and 5. Removing the device.



32

33

### NYSP Oral Fluid Collection Kit



The image shows the NYSP Oral Fluid Collection Kit, which is a white cardboard box with the text 'NEW YORK STATE POLICE' and 'ORAL FLUID COLLECTION KIT' printed on it. The box is open, revealing the collection device inside.




33

34

### NYSP Oral Fluid Collection


- Instructed to not let the subject conduct the test
- Not doing roadside collection
  - Safety concern (Trooper and subject)
  - Kit storage is room temperature – don't want to keep kits in car
- Collect at the station
- Keep OF kits near the evidential breath test units




34

35


### NYSP Oral Fluid Specimen Prep



**TOXTALK**  
MAXIMIZING SAMPLE VOLUME FOR QUANTISAL™ ORAL FLUID COLLECTION KITS  
SUBMITTED BY: AMANDA LA MOHR, CFSRE AND JENNIFER F. LIMOGES, NYSP FORENSIC INVESTIGATION CENTER, ON BEHALF OF THE SOFT/AAFS ORAL FLUID COMMITTEE



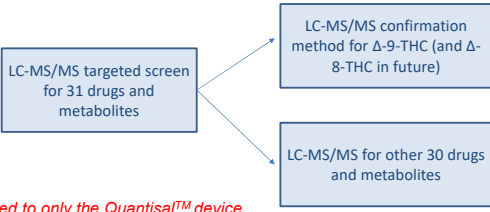
Increased available sample volume ~16%  
(average 3.6mL)



35


36

### NYSP Oral Fluid Testing



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graph LR; A[LC-MS/MS targeted screen for 31 drugs and metabolites] --> B[LC-MS/MS confirmation method for Δ-9-THC (and Δ-8-THC in future)]; A --> C[LC-MS/MS for other 30 drugs and metabolites];
```

Limited to only the Quantisal™ device  
Only drug testing, not testing for alcohol



36


37

Screen

- Liquid-liquid extraction
- Restek Raptor Biphenyl column
- Different LC gradient
- Different target MRMs (if available)

Confirm

- Solid phase extraction
- Waters Acquity BEH C18 column (drug) or CORTECS C18+ (THC)
- Different LC gradient
- Different target MRMs (if available)




37

38

Scope of Testing

Recommendations for Toxicological Investigation of Drug-Impaired Driving and Motor Vehicle Fatalities, *Journal of Analytical Toxicology*

- Tier 1 drugs
  - Included in all DUI/DWI testing
  - Represent the most frequently encountered drugs in DUI/DWI casework
  - Can be tested by commonly available instrumentation in crime labs
- Tier 2 drugs
  - Limited or regional prevalence, less frequently encountered
  - May require more advanced instrumentation not widely available




38

39

Scope of Testing

- Covers all Tier 1 compounds plus PCP
- Few (if any) options to outsource oral fluid for additional testing of Tier 2 drugs
- Blood should be collected if designer drugs or non-controlled substances are suspected




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Interpretation of Oral Fluid Results

- Qualitative result – positive or not detected
- Positive result is consistent with recent drug exposure – detection time window similar to blood
- Onset of detection depends on route of administration
  - Smoked, snorted, chewed immediate; IV very quick
  - Swallowed intact (pill) – delayed until equilibrates with blood




40

41

Interpretation of Oral Fluid Results

- Why not quantitating drugs in Oral Fluid?
  - Blood concentrations ≠ Oral Fluid concentrations
  - Exact amount of OF collected variable (Quantisal™ 1mL ± 10%)
  - Exact amount of buffer variable (Quantisal™ 3 mL ± 3.3%)
  - Drugs taken by insufflation, inhalation, sublingual coat the oral cavity
  - Drugs have different partition ratios between blood and oral fluid



41

42

Blood – Oral Fluid Correlation

> Traffic Inj Prev. 2014;15(2):111-8. doi: 10.1080/15389588.2013.796042.


Comparing drug detection in oral fluid and blood: data from a national sample of nighttime drivers

T Kelley-Baker<sup>1</sup>, C Moore, J H Lacey, J Yao

Results: 326 matched pairs of samples were both positive, out of which 247 (75.8%) were an exact match for all drug classes and 70 (21.5%) were positive for at least one common drug class

Overall, 97.2% agreement in paired samples

Conclusions: oral fluid and blood samples provided very similar information regarding recent drug intake... Oral fluid can be considered a reliable alternative to blood as a matrix for drug testing.



42

43


### Blood – Oral Fluid Correlation

Validity of oral fluid test for Delta-9-tetrahydrocannabinol in drivers using the 2013 National Roadside Survey Data

Huiyan Jin<sup>1</sup>, Sharifa Z. Williams<sup>2</sup>, Stanford T. Chihuri<sup>2</sup>, Guohua Li<sup>2,3</sup> and Qixuan Chen<sup>1\*</sup>

Jin et al. *Injury Epidemiology* (2018) 5:3  
<https://doi.org/10.1186/s40621-018-0134-2>

Conclusions: The oral fluid test is a highly valid method for detecting the presence of THC in blood but cannot be used to accurately measure the blood THC concentration.



43

44

### Blood – Oral Fluid Correlation


Screening for Drugs of Abuse in Oral Fluid—Correlation of Analysis Results with Serum in Forensic Cases\*

Stefan W. Toennes<sup>✉</sup>, Stefan Steinmeyer, Hans-Jürgen Maurer, Manfred R. Moeller, Gerald F. Kauert

Journal of Analytical Toxicology, Volume 29, Issue 1, January-February 2005, Pages 22–27,  
<https://doi.org/10.1093/jat/29.1.22>

Published: 01 January 2005    Article history ▾

Results: 97% of oral fluid samples positive for any substance were also positive in serum




44

45

### NYSP Evidential Oral Fluid Pilot Program

Goals

- Allow stakeholders to become familiar with oral fluid
- Identify any additional training needs or potential hurdles to broader implementation
- Collect data




45

46

### NYSP Evidential Oral Fluid Pilot Program

- September 25, 2023 – May 31, 2024
- Collect blood AND oral fluid from same subject during the pilot
- Focused on misdemeanor DWAI-drug investigations
- Collection limited to DREs and other select Members

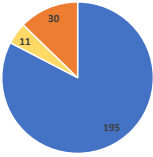


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### NYSP Evidential Oral Fluid Pilot Program

Pilot Program Submissions (n=236)



■ Blood-OF  
■ Urine-OF  
■ OF only

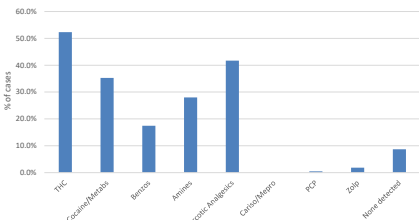


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### NYSP Evidential Oral Fluid Pilot Program

Drug Class Prevalence

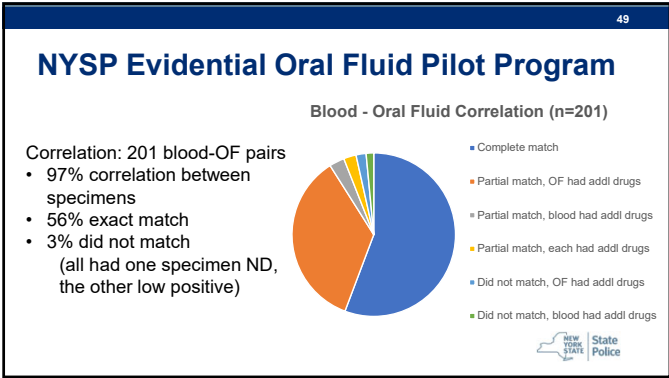


as of 5/29/2024

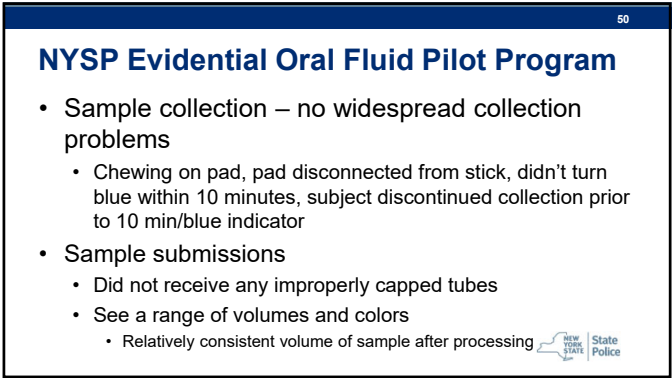


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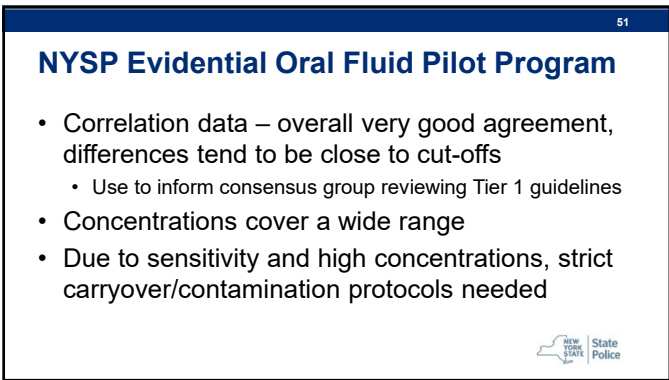




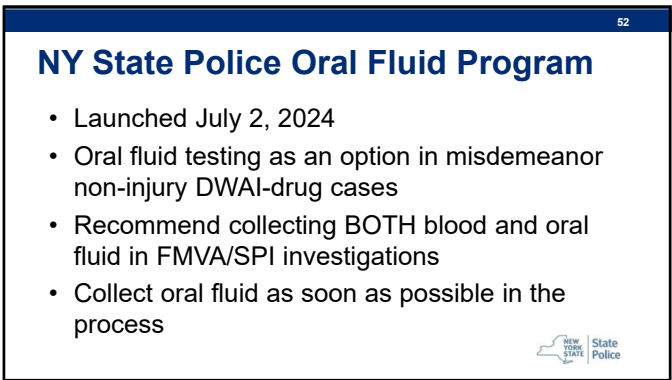
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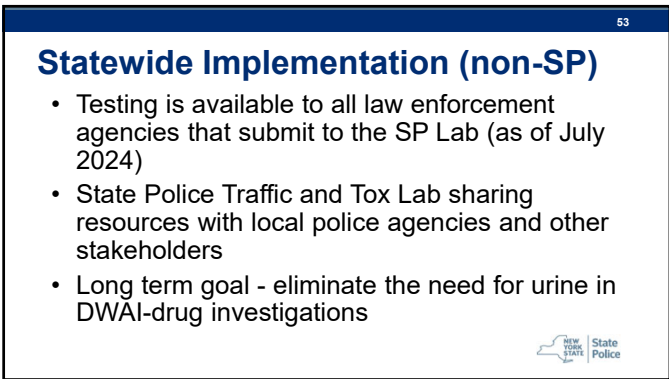
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### Outreach Efforts (in NY)


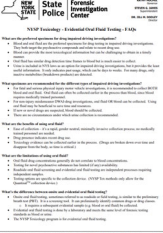
April-May 2024	Judicial Impaired Driving Seminars (4)
April 2024	Empire State Law Enforcement Traffic Safety Conference
Oct 2024	NY Highway Safety Symposium
2024	NY DRE recertification trainings (8)
March 2025	NYPTI Admitting Oral Fluid Tests into Evidence: Understanding the Science & Meeting Frye
2025	NY DRE training course (3)




55

56

### NSYP Lab Oral Fluid Testing FAQ




Available on NYSP Public website under Crime Lab Sections- Toxicology




56

57

### Oral Fluid Program Stats (through July 2025)



- 592 samples submitted
- 30% toxicology submissions
- ~15-20 non-SP agencies submitting
- 0 trials
- 2 Frye requests denied



57

58

### References

AAA Use of Oral Fluid to Detect Drugged Drivers: A Toolkit  
<https://publicaffairsresources.aaa.biz/wp-content/uploads/2022/04/FINAL-OF-Report-09.07.22.pdf>

SOFT/AAFS Oral Fluid Committee References  
<https://www.soft-tox.org/oral-fluid-literature>

SOFT ToxTalk Volume 47, Issue 4, 2023  
[https://www.soft-tox.org/assets/ToxTalk/ToxTalk\\_Issue%204\\_2023\\_Final.pdf](https://www.soft-tox.org/assets/ToxTalk/ToxTalk_Issue%204_2023_Final.pdf)

National Alliance to Stop Impaired Driving "Oral Fluid Use by State" map  
<https://nasid.org/oral-fluid-use-by-state/>

Drug Toxicology for Prosecutors, 2023 Edition, National Traffic Law Center  
<https://ndaa.org/resource/drug-toxicology-for-prosecutors-2023/>



58

59

### References

"Recommendations for the Toxicological Investigation of Drug-Impaired Driving and Motor Vehicle Fatalities – 2021 Update,"  
A. D'Orazio, A. Mohr, A. Chan-Hosokawa, C. Harper, M. Huestis, J. Limoges, A. Miles, C. Scameo, S. Kerrigan, L. Liddicoat, K. Scott, B. Logan. *J Anal Tox*, 2021, 45:529-536.  
<https://academic.oup.com/jat/article/45/6/529/6292018>

"Development and validation of a simple chromatographic method to screen oral fluid samples for drugs in DUID investigations," G. Sarris, D. Abbott, T. Moreno, K. Maychack, J. Limoges, *Journal of Analytical Toxicology*, 2024;  
<https://doi.org/10.1093/jat/bkaf068>

ANSI/ASB Standards: <https://www.aafs.org/academy-standards-board>



59

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### Contact Information

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60