

# Hemachemistry Unit

## North Carolina Laboratory of Public Health

### Lead Testing Procedures

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Hemachemistry Manager

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NC DEPARTMENT OF  
**HEALTH AND  
HUMAN SERVICES**

Division of Public Health  
State Laboratory of Public Health

# Key components to a quality report

1. Collection
2. Submission
3. Shipping
4. Analysis
5. Reporting

# Collection

## CDC video on specimen collection: Mission Unleaded

<https://www.youtube.com/watch?v=g2p2qREch9g>



# Website

**NCDHHS** State Laboratory of Public Health

DHHS > DPH > SLPH

**HAS YOUR CONTACT INFORMATION CHANGED? To prevent service delays, submit the following form**  
<https://slph.dph.ncdhhs.gov/Forms/ClientChangeOfInformation-Fillable.pdf>  
or contact CUSTOMER SERVICE for assistance at 919-733-3937.

**Medical and environmental lab services for NC citizens**

The State Laboratory of Public Health provides certain medical and environmental laboratory services (testing, consultation and training) to public and private health provider organizations responsible for the promotion, protection and assurance of the health of North Carolina citizens.

**Monkeypox Outbreak (MPX) 2022 Updates**

NCDHHS Monkeypox in NC: <https://www.ncdhhs.gov/divisions/public-health/monkeypox>

- [Monkeypox Provider Memo](#)
- [Monkeypox Specimen Collection and Shipping Guidance](#)
- [DHHS 5010: BT and Emerging Pathogens Clinical Form](#)

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## Hemachemistry

[Blood Lead Shipping Guidelines](#)

[Submitting Blood Lead Specimens to NCSLPH](#)

### Overview of Hemachemistry Unit

The Hemachemistry Unit performs blood lead testing for children and prenatal patients residing in North Carolina. Samples are received from health departments, hospitals, physician offices and clinics.

### Importance of Hemachemistry Testing

Childhood lead poisoning is one of the most common environmentally-caused pediatric health problems in the United States today. The persistence of lead poisoning, in light of present knowledge about the sources, pathways and prevention of lead exposure, continues to present a direct challenge to clinicians and public health authorities. According to the Centers for Disease Control and Prevention (CDC), there are approximately a half million children in the United States ages 1-5 with blood lead levels above 3.5 micrograms per deciliter ( $\mu\text{g}/\text{dL}$ ), the reference value at which CDC recommends public health actions be initiated. The newest methodology at the North Carolina State Laboratory of Public Health (NCSLPH) includes ICP-MS (Inductively Coupled Plasma Mass Spectrometer). In addition, effective October 2021, a multi-tier approach to follow-up has been adopted with an overall goal of reducing children's blood lead levels below 3.5  $\mu\text{g}/\text{dL}$ .

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Forms and Misc. Docs  
Hemachemistry  
Lab Improvement  
2023 NC SciFest

# Website:

## Frequently Requested

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- **12/21/2022:** [SCOPE: A Guide to Laboratory Services](#) (PDF, 3.55 MB)
- **12/16/2022:** [NCSLPH Courier Operation Schedule- Winter Holidays 2022](#)
- [SLPH Topics A-Z](#)
- [Water Sample Test Results](#)
- [Water Sample Testing \(Private Wells\)](#)
- [CLIA Certificate](#) (PDF, 138 KB)
- [Forms](#)
- [Clinical Lab Test Results](#) ←
- [Tutorial on Using CELR for Test Results](#) (PDF, 1.4 MB)
- [Order Supplies](#) ←
- [Clinical Specimen Storage Guide](#) (PDF, 496 KB)
- **11/30/2022:** [Clinical Specimen Shipping Tutorial](#) (PDF, 3.32 MB) ←
- [Specimen Submission Process FAQ](#) (PDF, 425 KB)
- [Blood Lead Submission Guide](#) (PDF, 3.4 MB) ←
- [Rabies Packaging and Shipping Training](#)
- [User Comments and Questions](#)

# Submission

This training covers:

1. Specimen preparation
2. Completing the DHHS 3707 submission form
3. Packaging and shipping



**Lead remains one of the most common causes of environmental poisoning in young children.**

The North Carolina State Laboratory of Public Health (NCSLPH) conducts blood lead testing on children and at-risk mothers living in North Carolina. We partner with local health departments, hospitals, physician's offices, and the North Carolina Childhood Lead Poisoning Prevention Program to provide this important service to families.

# Shipping

## Local Health Departments- courier

### Bags and Cans Placed in Large Courier Bag



- Place same temperature specimens into the large courier bag
- Place temperature label on large courier bag
- Specimens must be stored at the appropriate temperature until transferred
- **Large courier bags picked up at scheduled time – courier cannot wait!**
- If there is an extended delay in shipping specimens to SLPH, specimens should be frozen on dry ice
- Contact SLPH for further guidance on specimen collection and packaging



## All other submitters

### Blood Lead Testing: Sending Specimens to the State Lab

150 µL is the minimum that can be tested. Seal the tube well.

Put 2 unique identifiers on the specimen tube's label.

For example Patient's First and Last Name AND Date of Birth.

*Information on the specimen and DHHS 3707 form must match EXACTLY.  
If the specimen label has John, the form cannot have Johnny, Johnathan, etc.*

Complete the entire DHHS 3707 form for each specimen.

Available at: <https://slph.dph.ncdhhs.gov/Forms/3707-Blood-Lead-Analysis.pdf>

*DO NOT alter the form.*

*Use the most current version.*

*Ensure all information is accurate. Inaccurate submissions are subject to rejection.*

*For Medicaid patients, enter Medicaid # (required) and Member ID # (if applicable).*

Seal tube with absorbent material in a leak-proof specimen bag.

Slide folded DHHS 3707 form in outer sleeve of bag.

Use enough absorbent material to soak up all liquid in case of leaks.

One specimen per bag.

Package specimens as **UN3373 Biological Substance, Category B**.

The State Lab boxes can transport up to 50 mL of blood, per shipping regulations.

Use a State Lab Blood Lead label if supplying own box.

*Envelopes are not acceptable.*

*Attach a return address label, including responsible person with phone number.*

*Add cushioning to protect specimen(s) in transit.*

Ship at ambient temperature.

Need supplies or help?

Call SLPH Customer Service at 919-733-3937,  
SLPH Mailroom at 919-733-7656, or visit us at  
<https://slph.dph.ncdhhs.gov/hemachem/resources.asp>



NC Department of Health and Human Services  
Division of Public Health  
North Carolina State Laboratory of Public Health  
<http://slph.dph.ncdhhs.gov> 5/31/2022 NCDHHS  
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# Analysis: specimen



Lavender top with EDTA

Each analysis requires 50 ul

Left: 150 ul – minimum

Right: 250 ul - ideal



# Analysis: specimen preparation



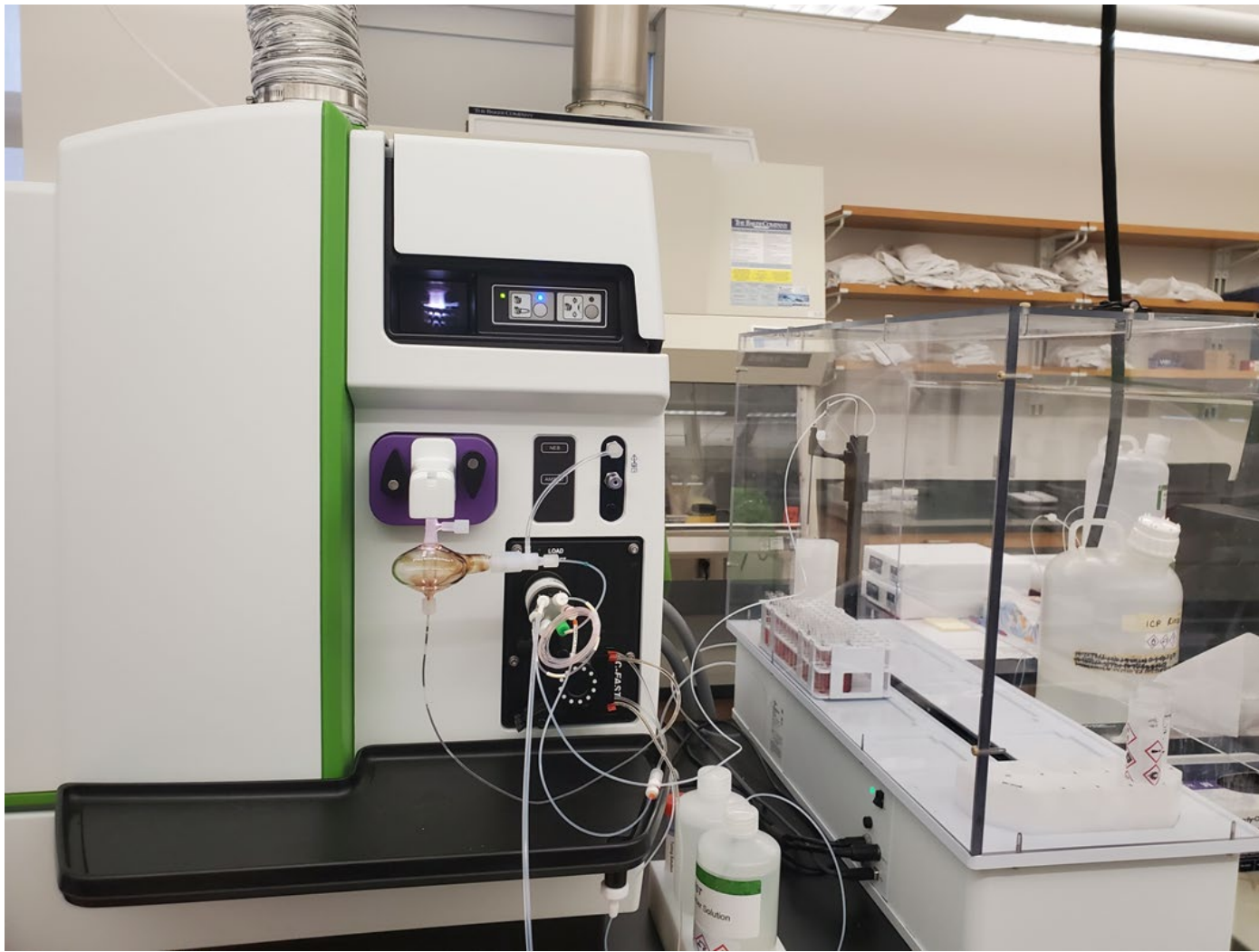
Automated liquid handling instrument=  
high throughput laboratory

Preparation of 8-point calibration curve

Preparation of 90 specimens in 15  
minutes

Preparation of all quality control  
materials

# Analysis: Inductively Coupled Plasma-Mass Spectrometer (ICP-MS)



Analytical time for analysis:  
42 seconds

Limit of Detection:  
0.166 ug/dL

Reportable Range:  
1.00 - 100 ug/dL



## Welcome to the NC State Laboratory's Clinical and Environmental Lab Results (CELR)

### Announcements:

#### - Address Change:

This notification serves to notify all Newborn Screening submitters that the North Carolina State Laboratory of Public Health (NSCLPH) will no longer maintain the PO Box 28047 address for receiving Newborn Screening specimens shipped via the United States Postal Service (USPS). Please immediately begin to use the following address for the mailing of Newborn Screening specimens via USPS:

North Carolina State Laboratory of Public Health  
1918 Mail Service Center  
Raleigh, North Carolina 27699-1918

The shipping address for UPS and FedEx shipments of Newborn Screening specimens remains unchanged as:

North Carolina State Laboratory of Public Health  
4312 District Drive Raleigh NC 27607

Any specimens shipped via USPS to the PO Box 28047 may be returned to sender and not arrive at the NCSLPH. If you have any questions please contact Damaris Hernández, Operations Manager at [damaris.hernandez@dhhs.nc.gov](mailto:damaris.hernandez@dhhs.nc.gov)

**When there has been a change of ownership, name, address, contact person, etc, [fill out entire form](#) and when completed, fax the completed form to 919-807-0730**

Please enter your login information to view clinical reports.

If you have not registered yet, please click [here](#).

If you have not logged in within the past 90 days you may be locked for inactivity, please contact your site administrator or call 919-733-3937

**\*\*If you are seeing a message stating "System Error, Please Contact Administrator", this means your password has expired. Please login to [CELR User](#) to update your password. We are currently working to correct this message, and we thank you for your patience.**

**Effective July 20, 2022, the NCSLPH CELR website is changing to <https://celr.dph.ncdhhs.gov/index>. Please update your bookmarks.**

Version 1.4

EIN:  Suffix:

User Name:

Password:

Sign in

**THIS WEBSITE IS FOR HEALTH CARE PROVIDER ONLY!**

Please click [here](#) if you want to view environmental reports

# Contact



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