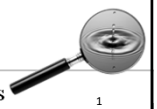
Lead Sampling in School Facilities

Laboratory Roundtable
October 2016



HOW DOES LEAD GET INTO A SCHOOL'S DRINKING WATER?

- SOURCE WATER
  - RARELY FOUND IN SOURCE WATER IN NEW JERSEY
- INTERACTION WITH THE SCHOOL'S PLUMBING MATERIALS CONTAINING LEAD
  - SERVICE LINE
  - INTERNAL PIPES
  - LEAD SOLDER
  - BRASS FAUCETS
  - CHROME-BRASS FAUCETS

The most common sources of lead exposure for children are chips and particles of deteriorated lead paint

STATE BOARD OF EDUCATION

- EFFECTIVE JULY 13, 2016
- REQUIRES THE TESTING FOR LEAD IN ALL DRINKING WATER OUTLETS TO WHICH A STUDENT OR STAFF MEMBER HAS OR MAY HAVE ACCESS TO.

PRIVATE (WELL) WATER SYSTEMS AND

NON-TRANSIENT NON-COMMUNITY WATER SYSTEMS

ARE REQUIRED TO GO THROUGH THE SAME PROCESS OF COMPLETING THEIR SAMPLING PLAN, CONDUCT THE SAMPLING, ANALYZE THE DATA AND FOLLOW THROUGH WITH CORRECTIVE ACTION BY **JULY 13TH, 2017.**

TWO STEP INVESTIGATION

- ONE
  - IDENTIFYING POTENTIAL SOURCES OF LEAD
  - OBTAINING ANALYTICAL DATA
- TWO
  - REVIEW OF DATA
  - DETERMINING NEXT STEPS
- TEAM EFFORT

WHO IS ON THE TEAM?

- PROGRAM MANAGER
- PROJECT MANAGER
- PROJECT OFFICERS
- OTHER MEMBERS
  - SAMPLE COLLECTORS
  - CERTIFIED LABORATORIES
  - CONSULTANTS
  - PUBLIC WATER UTILITIES

SAMPLE COLLECTORS

WHO CAN COLLECT A SAMPLE?

- A REPRESENTATIVE FROM A NJ CERTIFIED LABORATORY
- EMPLOYEE OF THE SCHOOL DISTRICT; OR
- REPRESENTATIVE OF THE SCHOOL DISTRICT (CONSULTANT).

- A NJ certified laboratory must conduct the analysis.

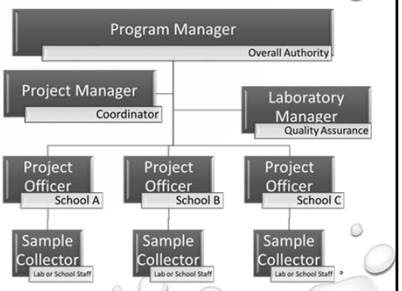
QUALITY ASSURANCE PROJECT PLAN (QAPP)

- DEFINES THE OVERALL GOALS AND OBJECTIVES
  - BASED ON US ENVIRONMENTAL PROTECTION AGENCY GUIDANCE
- DESCRIBES THE STEPS FOR:
  - PLANNING
  - IMPLEMENTATION
  - EVALUATION
- PROVIDES A HIGH LEVEL OF CONFIDENCE IN THE RESULTS
- ENSURES APPROPRIATE REMEDIATION MEASURES ARE QUICKLY IDENTIFIED AND IMPLEMENTED.
- NJ CERTIFIED LABORATORIES MUST BE FAMILIAR WITH THE ELEMENTS OF THE QAPP

8

PROJECT/TASK ORGANIZATION

- TEAM MEMBER:
  - IDENTIFICATION
  - RESPONSIBILITIES
  - HIERARCHY



9

PROJECT/TASK DESCRIPTION

- GENERAL OVERVIEW OF WHAT PROJECT ENTAILS

QUALITY OBJECTIVES

- SETS FOR CRITERIA TO ENSURE ACCURATE, REPRESENTATIVE RESULTS
- FOCUS IS ON ANALYTICAL METHODOLOGY

Secondary Data

- Historical Lead data

Field Monitoring Requirements

- Sampling protocol
- Equipment and supplies
- Chain of Custody Forms

Analytical Requirements

- Defines analytical methods to be used & Quality Control measures

Sample Handling

- Defines sample containers, transportation needs, and disposal

Instrument/Equipment Testing…

- Verification that laboratory equipment is calibrated

Data Management

- Defines how lab will provide results

11

Assessment/Oversight

- Identification and resolution of problems

Data Review, Verification

- Evaluation of results and comparison with field notes

Documents & Records

- Record retention requirements

12

SAMPLING PLAN: ELEMENTS

- INCLUDES:
  - SAMPLING PROJECT COORDINATION
  - SCHOOL SAMPLING PRIORITY
  - PLUMBING PROFILE/SURVEY
  - PLANNING
  - SAMPLE LOCATIONS
  - SAMPLING PROCEDURES

13

PREPARING FOR SAMPLE COLLECTION

- COMPLETE AND FINALIZE THE SAMPLING PLAN
  - PRIORITIZE SCHOOLS
  - PLUMBING PROFILE
  - DRINKING WATER OUTLET INVENTORY
  - FILTER INVENTORY
  - FLUSHING LOG
- TEMPLATES ARE AVAILABLE IN THE APPENDICES OF THE SAMPLING PLAN TEMPLATE

http://www.nj.gov/dep/watersupply/dwc-lead-schools.html

DRINKING WATER OUTLETS TO BE SAMPLED

- KITCHEN AND FOOD PREP (INDOORS AND OUTDOOR FACILITIES)
- TEACHER'S LOUNGE
- NURSE'S OFFICE
- HOME ECONOMIC ROOMS
- DRINKING WATER FOUNTAINS (INDOORS AND OUTDOORS)
  - BUBBLERS AND WATER COOLERS
- ICE MACHINES
- OTHER SITES IDENTIFIED BY THE DISTRICT






16

WALK THROUGH #1

TASKS TO BE COMPLETED:

- CREATE SAMPLE ID CODES
  - TO DISTINGUISH DRINKING WATER OUTLETS WITHIN THE FACILITY
- ID CODES ON OUTLET, FLOOR DIAGRAM AND INVENTORY
- ON-SITE ASSESSMENT OF DRINKING WATER OUTLETS

WALK THROUGH

- ON-SITE ASSESSMENT OF EACH OUTLET SHOULD IDENTIFY:
  - LEAKING
  - STAINED
  - MOTION SENSOR
  - SPRAY PATTERN
  - ADEQUATE FLOW TO COLLECT SAMPLE
  - COLOR AND/OR ODOR
  - ARE WATER COOLERS ON EPA'S RECALL LIST
- FILTER INVENTORY

FINALIZE LEAD SAMPLING PLAN AND QUALITY ASSURANCE PROJECT PLAN

- PLANNING AND PREPARATION ARE KEY IN MEETING THE OBJECTIVES OF THE LEAD SAMPLING PLAN AND QAPP.
- BEFORE ANY SAMPLES ARE COLLECTED THE COMPLETED QAPP FOR THE SCHOOL DISTRICT MUST BE SIGNED BY ALL ENTITIES AND SUBMITTED TO THE PROGRAM MANAGER.

48 HOURS PRIOR TO SAMPLING EVENT

- COMPLETE FLUSHING LOG
  - FLUSHING IS NECESSARY WHEN:
    - SAMPLING IS OCCURRING DURING A PERIOD OF TIME WHERE NORMAL USE HAS BEEN INTERRUPTED
- CONFIRMATION OF DRINKING WATER OUTLET REPAIRS OR OUT OF SERVICE
- OTHER PREP WORK SUCH AS NOTIFICATION TO PARENTS AND STAFF
- ENSURE WATER STAGNATION FOR 8-48 HOURS

WALK THROUGH #2

- CONDUCTED PRIOR TO THE STAGNATION PERIOD.
- COMPLETE THE PRE-SAMPLING WATER USE CERTIFICATION
- CONFIRM THERE IS NO FLOW FROM ANY OF THE DRINKING WATER OUTLETS.
- CONFIRM NO OTHER WATER USE:
  - TOILETS
  - FOUNTAINS
  - IRRIGATION

REMINDER

- NO ONE MAY ACCESS THE FACILITY PRIOR TO THE SAMPLING EVENT.
- THEREFORE, THE BUILDING MUST BE LOCKED AND SIGNS SHOULD BE POSTED.

HAVE THE FOLLOWING AVAILABLE FOR SAMPLE COLLECTION:

- AT LEAST THE SAME NUMBER OF NEW 250 ML HDPE WIDE MOUTH PRE CLEANED BOTTLES AS THERE ARE WATER OUTLETS TO BE SAMPLED
- A COOLER FOR EACH FACILITY TO BE SAMPLED
- AT LEAST THE SAME NUMBER OF NON-COLORED LATEX OR NITRILE DISPOSABLE GLOVES AS THERE ARE WATER OUTLETS TO BE SAMPLED
- INDELIBLE MARKER FOR RECORDING ON CHAIN OF CUSTODY
- A TIMING DEVICE.
- PREPRINTED WATERPROOF LABELS WITH THE REQUIRED SAMPLE INFORMATION

WALK THROUGH #3

- PERFORM A WALK THROUGH OF THE FACILITY PRIOR TO THE SAMPLING EVENT TO VERIFY THAT THE WATER HAS BEEN STAGNANT FOR AT LEAST 8 HOURS

LEAD WATER SAMPLE COLLECTION BASICS

- COLLECT COLD WATER SAMPLES
- DO NOT REMOVE AERATORS OR SCREENS
- DO NOT REMOVE FILTERS
- SAMPLE FLOW OF WATER SHOULD BE SIMILAR TO WHEN FILLING UP A GLASS OF WATER
- SAMPLE FROM BUBBLER IF THE OUTLET IS A SINK WITH BUBBLER
- DO NOT SAMPLE DISCOLORED WATER
- DO NOT SAMPLE HOSE BIBS, SHOWERS, SOAK TUBS, ETC.

TYPES OF LEAD WATER SAMPLES:

INITIAL FIRST DRAW

- FIRST 250 ML OF COLD WATER COLLECTED FROM THE DRINKING WATER OUTLET IMMEDIATELY AFTER THE STAGNATION TIME.

TYPES OF LEAD WATER SAMPLES:

FOLLOW-UP FLUSH

- 250 ML OF COLD WATER COLLECTED AFTER OUTLET RUNS FOR A DESIGNATED TIMEFRAME
  - 30 SECONDS FOR ALL WATER OUTLETS EXCEPT WATER FOUNTAINS WITH CHILLERS
  - 15 MINUTES FOR WATER FOUNTAINS WITH CHILLERS

ORDER OF LOCATIONS TO BE SAMPLED

- FIRST – FIELD BLANK
- SECOND - WATER OUTLET CLOSEST TO THE POINT OF ENTRY
- THIRD -THE NEXT OUTLET IMMEDIATELY DOWNSTREAM OF THE FIRST OUTLET SAMPLED
- CONTINUE TO MOVE DOWNSTREAM OF EACH PREVIOUSLY SAMPLED OUTLET

COLLECTING SAMPLES

FAUCETS

- PLACE WIDE MOUTH BOTTLE DIRECTLY UNDER THE FAUCET TO CAPTURE THE ENTIRE FLOW OF WATER

FOUNTAINS/BUBBLERS

- ANGLE THE WIDE MOUTH OF BOTTLE AT A DEGREE FROM THE BUBBLER TO CAPTURE THE WATER FLOW

COLLECTING SAMPLES

SINK WITH BUBBLER

- COLLECT THE SAMPLE FROM THE BUBBLER

ICE MACHINES

- CAN FILL A 250 ML BOTTLE UP WITH ICE THAT WAS TOUCHED USING GLOVES.
- CAN DISCONNECT THE ICE MACHINE FROM THE PLUMBING AND COLLECT SAMPLE.

TWO OPTIONS FOR SAMPLE COLLECTION FIRST DRAW AND FOLLOW-UP FLUSH

- DIFFERENT DAY SAMPLE COLLECTION
- SAME DAY SAMPLE COLLECTION

DIFFERENT DAY SAMPLE COLLECTION

FIRST DAY

COLLECT INITIAL FIRST DRAW SAMPLES

- FIRST – FIELD BLANK
- SECOND - WATER OUTLET CLOSEST TO THE POINT OF ENTRY
- THIRD -THE NEXT OUTLET IMMEDIATELY DOWNSTREAM OF THE FIRST OUTLET SAMPLED
- CONTINUE TO MOVE DOWNSTREAM OF EACH PREVIOUSLY SAMPLED OUTLET

DIFFERENT DAY SAMPLE COLLECTION

SECOND DAY

COLLECT FOLLOW-UP FLUSH SAMPLES

- FIRST – FIELD BLANK
- SECOND - WATER OUTLET CLOSEST TO THE POINT OF ENTRY
- THIRD -THE NEXT OUTLET IMMEDIATELY DOWNSTREAM OF THE FIRST OUTLET SAMPLED
- CONTINUE TO MOVE DOWNSTREAM OF EACH PREVIOUSLY SAMPLED OUTLET

DO NOT SAMPLE DRINKING WATER FOUNTAINS WITH CHILLER UNITS UNTIL ALL OTHER FOLLOW-UP FLUSH SAMPLES HAVE BEEN COLLECTED

SAME DAY COLLECTION METHOD

- FIRST – FIELD BLANK
- SECOND - WATER OUTLET CLOSEST TO THE POINT OF ENTRY
  - COLLECT INITIAL FIRST DRAW SAMPLE
  - COLLECT 30 SECOND FOLLOW-UP FLUSH SAMPLE
- THIRD -THE NEXT OUTLET IMMEDIATELY DOWNSTREAM OF THE FIRST OUTLET SAMPLED
  - COLLECT INITIAL FIRST DRAW SAMPLE
  - COLLECT 30 SECOND FOLLOW-UP FLUSH SAMPLE
- CONTINUE TO MOVE DOWNSTREAM OF EACH PREVIOUSLY SAMPLED OUTLET

DO NOT COLLECT FOLLOW-UP FLUSH SAMPLE FROM DRINKING WATER FOUNTAINS WITH CHILLER UNITS UNTIL ALL OTHER INITIAL AND FOLLOW-UP FLUSH SAMPLES HAVE BEEN COLLECTED

CHAIN OF CUSTODY

- DOCUMENT NAME AND ADDRESS OF FACILITY
- DOCUMENT NAME OF SAMPLE COLLECTOR AND AFFILIATION
- RECORD SAMPLE LOCATION ID CODE FOR EACH SAMPLE
- RECORD TIME OF SAMPLE COLLECTION FOR EACH SAMPLE
- DOCUMENT WHICH OUTLETS HAVE FILTERS

AFTER SAMPLING EVENT

- RECORD THE TIME THAT SAMPLING CONCLUDES
- COUNT THE SAMPLING BOTTLES AND COMPARE TO THE CHAIN OF CUSTODY AND WATER OUTLET INVENTORY
- SIGN THE CHAIN OF CUSTODY WHEN RELINQUISHING THE SAMPLES TO THE NJ CERTIFIED LABORATORY
- OPEN THE HOT WATER VALVES AT OUTLETS AND RESTART IRRIGATION AND OUTDOOR WATER FEATURES

ANALYTICAL REPORTING FORMAT FOR LEAD RESULTS

Appendix D: Excel Template for Lead Results

Field ID	Flushed Y/N	Laboratory sample ID	Laboratory Name	Lab Certification ID	Date Sampled	Time Sampled	Analytical Method	Date of Analysis	Time of Analysis	Concentration in ug/L	Reporting Limit (ug/L)	Dilution Factor	Digested (Y/N)	Qualifier
01 AC-HS-1FL-N-1-OFFICE	N	DWS-1234-01	LAB	01234	3/19/2016	9:15	200.8	3/22/2016	22:44	235	0.2	1	Y	

IMPORTANT REMINDERS!

- MAKE SURE SCHOOL DISTRICT EMPLOYEE OR INDIVIDUAL FAMILIAR WITH THE SCHOOL IS PRESENT AT THE SAMPLING EVENT
- FOLLOW FLOOR PLAN
- DO NOT REMOVE AERATORS, SCREENS, OR FILTERS PRIOR TO SAMPLING
- START SAMPLING AT OUTLET CLOSEST TO THE POINT OF ENTRY
- USE PRE-CLEANED 250 ML WIDE MOUTH BOTTLES
- ONLY COLLECT COLD WATER SAMPLES
- USE A NEW PAIR OF GLOVES AT EACH SAMPLING LOCATION
- COUNT SAMPLING BOTTLES
- COMPLETE THE CHAIN OF CUSTODY

LEAD TEAM

609-292-2957

HTTP://WWW.NJ.GOV/DEP/WATERSUPPLY/DWC-LEAD-SCHOOLS.HTML

- KRISTIN HANSEN
- KAT BURKHARD
- LERONDA AVILES
- GWEN DERRICOTTE
- MICHELLE TAORMINO
- KRISTEN RIDARICK
- SHAZA RIZVI
- DAYLAN WARE

39

DOE INFORMATION

- HTTP://WWW.STATE.NJ.US/EDUCATION/LEAD/
- LEADTESTING@DOE.STATE.NJ.US.

40