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From: Commander, Navy Installations Command
To: Distribution

Subj: INTERIM GUIDANCE FOR SAMPLING AND TESTING FOR LEAD IN DRINKING WATER IN PRIORITY AREAS

Ref: (a) OPNAV Ltr 5090 Ser N45/14U132588, Sampling and Testing for Lead in Drinking Water in Priority Areas, 8 Feb 2014
(b) OPNAV M-5090.1D
(c) Safe Drinking Water Act, 42 U.S.C. 300f-300j
(d) 3Ts for Reducing Lead in Drinking Water in Schools: Revised Technical Guidance, October 2006
(e) OPNAV Ltr 5090 Ser N45/16U132466, Navy Policy Requirements for Drinking Water Exceedances, 14 Oct 2016

Encl: (1) Interim Guidance for Sampling/Testing for Lead in Drinking Water in Priority Areas

1. Per references (a) and (b), testing for lead is required for all drinking water coolers and outlets in priority areas, such as schools and child development center facilities. This testing exceeds the standards established by the U.S. Environmental Protection Agency (EPA) Lead and Copper Rule and reference (c), and is based on technical guidance published in reference (d). Enclosure (1) provides interim guidance to assist Navy Regions and installations with implementation of the requirements set forth in references (a), (b), and (e) until it is superseded by the issuance of a CNIC instruction.

2. This guidance is effective immediately and is consistent with existing Navy Policy Requirements. As many Regions and installations are now getting ready to conduct a second round of Lead in Priority Areas (LIPA) tests, it is particularly important for all testing, coordination and communication to follow enclosure (1).

3. The CNIC N45 point of contact for this topic is Ms. Patricia Greek, DSN 288-4962, commercial (202) 433-4962, or e-mail patricia.greek@navy.mil.


A. M. EDMONDS
By direction

Subj: INTERIM GUIDANCE FOR SAMPLING AND TESTING FOR LEAD IN DRINKING
WATER IN PRIORITY AREAS

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INTERIM GUIDANCE FOR SAMPLING AND TESTING FOR LEAD IN DRINKING WATER IN PRIORITY AREAS

1. Issue and Background

a. Per reference (a), testing is required for all drinking water coolers and outlets in priority facilities, such as schools and child development center (CDC) facilities, to determine the presence of lead. This testing protocol exceeds requirements set out in U.S. Environmental Protection Agency (EPA) Lead and Copper Rule and Safe Drinking Water Act (SDWA) regulations and is based on technical, not regulatory, guidance published by the U.S. EPA. This implementation guidance has been developed to assist installations with conducting initial and follow-up testing in accordance with Navy policy set forth in reference (a).

b. Appendix A is provided to assist in preparing the communication plan and fielding specific questions that may arise during these efforts. Communication to all internal and external stakeholders, including the Preventive Medicine Authority (PMA), must begin with sufficient time prior to the sampling event per Appendix B. The installation Public Affairs Officers (PAO) must be familiar with this guidance and be prepared to respond to media queries. Requirements for communications to each stakeholder are incorporated into each step of this guidance.

2. Sampling Coordination and Notification Procedures

a. Prior to conducting any sampling, it is important to have a risk communication plan prepared and coordinated with all stakeholders and interested parties. Refer to Appendix B for an example schedule for Drinking Water Sampling for Lead that will help with coordination steps. The schedule in Appendix B includes three major tasks; preparation, sampling, and corrective action. Each major task should include notification and/or coordination with the internal and external stakeholders and interested parties. It is important to schedule a meeting with the Facility Director to identify sampling locations early in the preparation process.

b. Utilize the Facility Interview Form included in Appendix C to obtain the following information during the meeting:

(1) Time facility closes – Securing of outlets should occur the day before sampling after the facility closes. Therefore, ensure staff will be available during this time. Water should not be used for 8-18 hours prior to sampling. The 8-18 hour holding time is not applicable to 24/7 facilities.

(2) Time facility opens – Facility staff may need to adjust their schedules and report earlier to ensure sampling is completed before parents and children arrive and before any water is used (including toilets and outlets that are not sampling locations). 24/7 facilities should be sampled early in the morning as the lowest use patterns are typically overnight.

(3) Facility floor plan – Request a facility floor plan. If possible, utilize the floor plan and location identifications from previous Lead in Priority Areas (LIPA) surveys. If no floor

plan is available, verify if the building has an Emergency Evacuation Plan that can be used. Otherwise, develop a floor plan to identify each outlet location.

(4) Drinking water outlets – Priority areas required for sampling are defined in reference (a), as drinking fountains, kitchen sinks, home economic room sinks, teacher lounge sinks, nurse’s office sinks, classroom sinks, bathroom sinks, and any sink used for consumption. Per EPA Guidance, consumptive uses include drinking, cooking, and washing (including teeth brushing). This includes utility sinks, hose attachments, and outdoor outlets if used to fill water jugs. This does not include ice machines at the facility. Identify sampling locations using the standard nomenclature as described in Appendix D. If previous LIPA surveys have already identified a differing nomenclature, continue to use existing sampling location IDs as defined. Do not sample hot water faucets, showers, and deep sinks utilized only for utility cleaning as they are not to be used for drinking. All fixtures should be included in Appendix C, with a reason provided if not sampled (e.g. fixture is a hose bib not used for consumption, clearly marked). If the sample ID format is too long to be included in the sample bottle label, assign an internal ID number that corresponds to the sample ID format.

(5) Facility Management Specialist (FMS) contact information – In the event of results above the recommended screening level of 20 ppb, coordination with the building FMS has to be made for cleaning of aerators and any other required corrective actions. Since re-sampling of the affected outlets is expected immediately, it is important to have the FMS contact information beforehand.

3. Sampling Plan Development

a. Utilize the information gathered in the Facility Interview Form, Appendix C, to develop the sampling plan. The sampling plan should be a robust document specific to the facility/installation that includes the appropriate requirements from the risk communication plan, sampling locations, procedures, laboratory locations, result interpretation, and any immediate or intermediate remedial measures to be taken. If a map of the facility is available (even an emergency evacuation map), it should be utilized to document the sampling locations and be included in the sampling plan. If a prior sampling plan is available, utilize the existing format and add tabs to the sample locations results reporting form in Appendix E as necessary for the recurring event. By utilizing the same worksheet for every year of sampling, historical results for each fixture will be available in a single file for comparison purposes. Identify the planned sampling date for initial first draw samples. Additionally, photographs of the individual fixtures may be useful if the location is difficult to explain or document. Photographs can help ensure that the correct fixture is secured as well as document corrective actions.

b. If an aerator maintenance plan exists, coordinate the sampling to not disturb the aerators for at least 48 hours prior to the scheduled event.

c. All faucets with a potential for consumptive purposes must be sampled. Sampling procedures must be representative of consumption. This includes motion sensor faucets that may be present in facilities. To sample motion sensor faucets, do not turn off the hot water valve prior to sampling in order to collect a sample representative of typical use.

d. Installations must have sampling plans reviewed by the Region N45 and local PMA and shared with stakeholder's (i.e. DODEA, N9, PAO, NAVFAC)

4. Staff and Parental Notification Procedures. The Sampling Announcement Letter for Facility Staff and Parents in Appendix F must be used as the sample letter to notify staff and parents of sampling to be conducted. Modifications can be made to the letter to customize as appropriate. The letter must be signed by the Installation Commanding Officer (CO), with concurrence from the Installation PMA and distributed to the parents and staff as well as the Installation and Regional PAOs. The fact sheet in Appendix G, "Preventing Lead Problems: Routine Steps" should be included.

5. Outlet Securing Prior to Sampling

a. This task should be performed 8-18 hours before the sampling occurs, following facility closure. Ensure all sample bottles and chain of custody forms are partially completed with sample ID and scheduled collection date. If practicable, place properly identified bottles by each sampling location.

b. Post the sign included in Appendix H on each sampling location to secure outlet. Do NOT secure outlets by closing the water supply valve. In addition to the signage, the facility may utilize tape and/or bags over the fixtures to prevent usage. For motion sensor faucets, do not place tape or bags in a manner that will trigger the faucet during the stagnation period.

c. Ensure the cleaning crew has been instructed to not use water from outlets or toilets within 8 hours of the planned sampling start time.

d. Confirm the facility point of contact for the sampling event in the morning.

6. Sample Collection and Results Interpretation

a. Do not collect samples in the morning after vacations, weekends, or holidays because the water would have remained stagnant for too long and would not represent the water used for drinking during most of the days of the week. At 24 hour facilities, the sample shall be collected during the period of lowest projected use, typically early in the morning.

b. The sampler should induce a typical steady flow of water from the outlet and collect a first draw sample without any wasting of water from the fixture.

c. All water samples collected should be 250 milliliters (mL) in volume in wide-mouthed bottles to allow for the typical flow rate.

d. Collect all water samples before the facility opens and before any water is used. Ideally, the water should sit in the pipes unused for at least 8 hours but not more than 18 hours before a sample is taken. If the fixture has a typical stagnation (normal use pattern) of greater than 18

hours, do not perform pre-stagnation flushing prior to collecting a sample. Samples collected should be representative of normal first use. If a facility has been temporarily closed due to seasonal use or other reason, it is recommended that the system be flushed and allowed to let stand for between 8-18 hours to simulate normal use.

e. EPA recommends that a two-step sampling process be followed for identifying lead contamination. The two-step sampling process helps to identify the actual source(s) of lead.

(1) In Step 1, initial samples are collected to identify outlets providing water with elevated lead levels and to learn the level of the lead in the water entering the facility (i.e., at the point of entry).

(2) In Step 2, follow-up flush samples are taken only from outlets identified as problem locations to determine the lead level of water that has been stagnant in upstream plumbing, but not in the outlet fixture.

f. The recommended sampling protocol for each different type of outlet can be found in reference (b). There are two recommended deviations from this protocol.

(1) For Step 1, the Navy does not require collecting a point of entry or initial service location sample. A facility can collect this sample if data is not available from the facility's Lead and Copper Rule sampling requirements or prior year efforts. The sampling location will be the first fixture in the building from the service connection point.

(2) For Step 2, if sample results from the first round are greater than 20 ppb, the aerators on these faucets shall be cleaned and the faucet shall be resampled to include a first draw and flush sample. There must be 48 hours between aerator cleaning/replacement and collection of first draw samples. The first draw and flush samples shall be collected per the recommendations in reference (b). The inclusion of a Step 2 first draw sample will help identify if the faucet itself is the source of lead or if particulates are being trapped within the aerator. If the first draw samples collected during Step 2 are below the action level, an aerator maintenance program must be implemented. While reference (b) does not include procedures for sampling motion sensor faucets, these samples should be collected in the same manner as a typical standard faucet type. Do NOT turn off the hot water valve as blended water is representative of typical use.

7. Results Interpretation Procedures. Record all results in the Sample Summary Results Table provided as Appendix E. For results greater than (>) 20 ppb identify the source of lead based on interpretation of results for each type of fixture in reference (b) to allow corrective actions to be implemented.

8. Results Notification Procedures

a. All notification must be fully coordinated with the region environmental, counsel, installation PMA, and Public Affairs. Overseas installations must also coordinate this through the Installation Water Quality Board and Regional Water Quality Boards. Notifications of any results > 20 ppb should be reported to the ICO and be forwarded via the Region N45 to CNIC N45/NAVFAC HQ EV BL for awareness.

b. Utilize Sampling Below Screening Level Results Letter template for Facility Staff and Parents in Appendix F to notify staff and parents of results of sampling where no exceedances occurred.

c. Utilize Sampling Above Screening Level Results Letter template for Facility Staff and Parents in Appendix F to notify staff and parents in the event of exceedances of the screening level.

d. Utilize Sampling Overview Results template for Facility Staff and Parents in Appendix F to notify staff, parents, and other stakeholders via Region and Installation Website.

e. In the event congressional notification is required, utilize the CODEL Above Screening Level Results Notification Template provided in Appendix I.

9. Corrective Actions

a. Implement appropriate corrective actions based on the source of lead as identified using reference (b). The following are the most likely sources of lead:

(1) Debris in aerator – This can be caused by upstream work on the plumbing system or standard degradation of plumbing materials. Replacement and/or cleaning of the aerator on a regular basis should address this source. Debris in aerators may also be present following the system's unidirectional flushing efforts.

(2) Faucet – Brass components from faucets may contribute lead in drinking water. Replace the faucet with an NSF International approved product.

(3) Supply tubing, supply valves – Brass components in tubing connectors and supply valves may contribute to lead in drinking water. Replace tubing and supply valve with NSF approved products.

(4) System components in the plumbing upstream from outlet, e.g., soldered joints, fittings, lead pipe, meters - Lead contribution from upstream plumbing is typically represented by follow-up flush sample. Follow-up flush samples will help identify the plumbing segment contributing lead. Refer to Appendix J to determine the length of pipe represented by each sampling volume. Replace affected segment of plumbing upstream with NSF approved products. Ensure partial replacement of lead pipes connecting to a dissimilar metal be protected from galvanic corrosion with a dielectric union.

(5) Unpassivated plumbing components – New brass plumbing components have been shown to leach elevated levels of lead immediately after installation, usually followed by a general decline in levels after repeated exposure to water. Research attributes this to contact of drinking water with unpassivated brass components. Unpassivated plumbing components have not yet established a protective film (usually consisting of metal hydroxides and metal carbonates, or a layer of calcium carbonate) on interior plumbing component surfaces in contact with the drinking water. The establishment of that protective film is a process called passivation and is achieved through repeated exposure to the drinking water. Intermittent water use patterns are known to delay above-mentioned process.

(6) Hot water – Lead will be dissolved more quickly by hot water. Therefore samples collected from blended water sources (hot and cold) may contain increased lead levels. The EPA recommends only using cold water for consumption.

b. Solutions to elevated lead results are typically made on an interim basis and a permanent basis. Work closely with the public works officer to choose the corrective action appropriate for the facility. Below are some interim control measures that can be utilized as short term solutions:

(1) Flush the fixtures daily to remove water that has been standing in pipes and/or fixtures. The flushing time should vary based on identified source of lead and type of fixture.

(2) Provide bottled water.

(3) Shut off problem outlets.

c. The following are corrective actions that will permanently reduce or eliminate the source of lead:

(1) Replace fixture – If the source of lead is localized or limited to a few outlets, replacement may be the most practical solution. Ensure any new device installed is in compliance with current lead-free classification and meets NSF standards. Certain brands of blended motion sensor faucets may meet the NSF 61 standard, however it recommended to go to a standard (non-blended) faucet if the fixture is likely used for consumption.

(2) Add a point of use (POU) device – POU devices can be placed on faucets or taps, but not on fountains. Effectiveness varies for these units and any device should meet the NSF standard for lead removal. If utilized, this plan of action must include the development of an operation and maintenance plan that details replacement frequency and funding responsibility.

(3) Check grounding wires – Verify that no existing electrical wires are grounded to the water pipes. If found, replace with an alternative grounding system as electrical current will accelerate the corrosion of lead in pipe materials.

(4) Replace lead piping – If lead pipe is discovered in the building materials, replace with lead-free service lines.

(5) Reconfigure piping – If only a small section of piping in the building contains lead, consider bypassing this section to supply water for ingestion purposes.

(6) Bottled water – If all other corrective actions are impractical, bottled water can be utilized as a permanent solution.

(7) Permanent outlet closure – If an outlet is not used regularly, permanent removal is a viable option.

(8) Aerator maintenance program – This corrective action can be used if the first draw sample following aerator cleaning/replacement came back at or below the action level. EPA allows the use of a preventative maintenance program for aerator cleaning as a corrective action in the 3Ts guidance document. This may be utilized at CNIC installations if the program is documented and performed at least on a semi-annual basis. Aerator maintenance can also be utilized in conjunction with any of the listed corrective actions as an additional step to decrease potential sources of lead. Aerator maintenance should also be performed in conjunction with a unidirectional flushing event, as these events may increase particulates in the system.

d. The EPA has created flow charts to illustrate the corrective action process, which are a part of reference (b).

10. Post-Remediation Sampling. Re-sampling must occur after each corrective action is employed. Re-sampling and additional remediation efforts must continue until results are less than or equal to 20 ppb. All corrective actions and follow-up testing must follow the procedures outlined in this document, including communication and record requirements.

11. Post-Remediation Notification Procedures

a. Record all results in the Sample Summary Results Table provided as Appendix E.

b. Utilize Post-Remediation Notification Letter in Appendix F to notify staff and parents of post-remediation results after corrective measures have been implemented and testing confirms results are less than or equal to 20 ppb. The letters must be signed by the Installation CO in coordination with the PMA and PAO as required in the facility's communication plan.

c. Utilize the "Overview of Testing Results for Lead in Drinking Water and Corrections" in Appendix F, Page F-7, as the sample document to summarize results and explain any corrective actions implemented for each facility tested. All results must be posted in the Installation and Region specific website and linked to from the CNIC HQ Drinking Water webpage.

12. New Facilities and Replacement Fixtures. All new facilities and repair/replacement work shall follow the Unified Facilities Guide Specifications (UFGS) 22-00-00, which requires all fixtures to be compliant with the NSF or American National Standards Institute (ANSI) 61. The UFGS also requires that the system be flushed and aerators/screens cleaned following any system flushing. Aerators should be cleaned following any system repair, even when a system flush is not required. Records must be kept in accordance with Section 14, below.

13. Annual Audits

a. Environmental staff shall perform an annual audit of each priority area to determine if any plumbing or treatment modifications have been made. The annual audits must include the following steps at a minimum:

(1) Facility walk-through to compare prior year sampling plan and facility map to existing conditions.

(2) Review of priority area locations with N9 to determine if any new facilities have been added since the last audit/sampling.

b. If any modifications are noted during the audit, the environmental staff must confirm that the replacement work conformed to Section 1417 of the SDWA, which establishes a requirement and definition for “lead free”, by reviewing all available lead-free certification paperwork or other marks identifying conformance to NSF/ANSI 61. If proof of “lead-free” plumbing and fixtures cannot be provided a baseline sampling event shall be immediately scheduled.

14. Records Management

a. Per reference (a), records of sampling and testing of drinking water in priority areas shall be retained for 12 years. Records of sampling/testing efforts shall include, but are not limited to:

(1) Sampling Plan (including map)

(2) Sample Results

(3) Public Notifications (all external communications)

(4) Records of corrective actions and follow-up sample results

(5) Annual audit records

(6) Certificates for lead-free materials (with mapped location) (new facilities and renovations)

b. Records shall be kept by the Installation and regional environmental staff using the document folders in EMSWeb. Additionally, sample results must be posted on the installation’s CNIC website and linked properly to the Regional CNIC website for water quality.

15. Results Reporting. A summary of the priority facilities at each installation that have collected LIPA samples per the Navy Policy should be reported to Naval Facilities Engineering Command and CNIC HQ at the conclusion of the fiscal year. Each region should be prepared to submit a copy of the sampling results as recorded in Appendix E as well as a summary of the corrective actions and any lessons learned. Also ensure the results are posted on the installation's website (e.g. CNIC website).

16. References

- a. OPNAV ltr 5090 Ser N45/14U132588, Sampling and Testing for Lead in Drinking Water in Priority Areas, 8 Feb 2014
- b. 3Ts for Reducing Lead in Drinking Water in Schools: Revised Technical Guidance, October 2006

17. List of Appendices

- A Public Affairs Guidance
- B Procedures and Timeline
- C Facility Interview Form
- D Standard Nomenclature for Identifying Sampling Locations
- E Sample Summary Results Table
- F Example Notification Letters
- G "Preventing Lead Problems: Routine Steps" Fact Sheet
- H Sign to Post to Secure an Outlet
- I CODEL Above Screening Level Results Notification Template
- J Pipe Length/Sampling Volume Conversion Guide

APPENDIX A
PUBLIC AFFAIRS GUIDANCE FOR SAMPLING AND TESTING FOR
LEAD IN DRINKING WATER IN PRIORITY AREAS

1. BACKGROUND

a. Navy policy dated 8 February 2014 directs all Navy installations to implement a program to sample, test and maintain resultant records for all drinking water in the following priority areas to determine the presence of lead: primary and secondary schools, Child Development Centers (CDC), Navy operated 24/7 Group Homes, and youth centers.

b. Region commanders will ensure installations have developed an appropriate risk communication plan to inform stakeholders of their actions to minimize exposure to Lead in Priority Areas (LIPA). Parents and families of child-care centers, youth centers, and Navy schools are key stakeholders. All Commander, Navy Installations Command (CNIC) civilians, military personnel, and local nationals working within the CNIC enterprise are also identified as key stakeholders for internal messaging.

2. GOALS

- a. Inform stakeholders of the proactive steps being taken by the shore installation enterprise to test water at all Navy priority areas and plans made to begin testing at their facility
- b. Provide a process for use across all installations so that consistent messaging on water testing can be accomplished.

3. OBJECTIVES

- a. Maintain transparency with all stakeholders through frequent communication.
- b. Maximize all available tools to communicate with stakeholders.
- c. Communicate with stakeholders early and often.

4. AUDIENCE

- a. Navy personnel (military and civilian) and their families.
- b. Host national employees at the regions and installations.

5. STRATEGY

a. Provide communication guidance across the CNIC enterprise for the regional and installation public affairs officers (PAO) to use as testing begins in their locations.

(1) Regional PAOs will provide guidance and assist installation PAOs with communication planning and the supporting medical treatment facility (MTF) preventative medicine personnel.

(2) Region PAOs will provide regular communication updates to CNIC public affairs.

b. Maintain transparency and timely flow of information with all stakeholders.

6. PUBLIC AFFAIRS POSTURE. Active.

7. KEY MESSAGES

a. The health and welfare of our Sailors and their families are our top priority.

b. Navy leadership remains committed to the health and welfare of both staff and children at all of our child-care facilities and youth centers.

c. We are taking proactive measures to ensure our water is safe as part of our commitment to the health and well-being of our Sailors and their families.

d. During testing, we will keep stakeholders informed throughout the entire process and respond to questions in a timely manner.

e. We will take immediate corrective action should we find a problem so that the safety and health of our personnel and their family members can be maintained.

f. Navy leadership has adopted as policy the U.S. Environmental Protection Agency (EPA) recommendations for testing for lead in schools and child-care facilities.

g. The Navy's effort is above and beyond EPA requirements.

8. TACTICS

a. INTERNAL:

(1) Inform command through staff meetings, All Hands emails, departmental meetings and open forums as appropriate.

(2) Hold All Hands calls to inform personnel.

(3) Conduct internal Informational Meetings to inform personnel and their families. Use Ombudsman and the local Navy medical subject matter experts (SME) at these forums to provide information on the testing.

(4) Produce and distribute fact sheets, flyers and infographic for stakeholders.

(5) Engage local commands, including wardroom officer and the chief petty officers, aboard local home-based ships, tenant commands, and/or other deployable units.

b. EXTERNAL:

(1) Provide a link on the installation “Drinking Water” webpage that includes all necessary information to stakeholders with testing results.

(2) Identify SME/spokesperson(s) to engage regional media in response to query.

9. POINTS OF CONTACT

- a. Source/Coord: CNIC PAO (Snyder); CNIC N45 (Greek)
- b. PA Lead: CNIC
- c. CNIC PAO POC: CAPT Snyder; (202) 685-0867
- d. NAVFAC PAO POC: Anthony Cooper; (202) 685-1423
- e. Region POC: Navy region PAOs will coordinate with installations and manage communication efforts in their respective areas.
- f. CHINFO POC: LT Chika Onyekanne; (703) 697-5342
- g. OLA POC: CDR Jeanne Womble; (571) 236-7406
- h. Navy Medicine POC: Dr. Paul Gillooly (757) 953-0664 and Mr. Tony Carotenuto (757) 953-0712.

10. Q&A

Testing:

Q1. Why are you testing for lead in the drinking water?

A1. Navy policy issued in 2014 requires testing in all priority areas at Navy installations throughout the world in the best interests of the children, parents, and staff we serve. Navy leadership has adopted the U.S. Environmental Protection Agency guidelines for sampling and testing for lead in schools and child-care facilities as policy. This proactive approach to the identification and elimination of potential sources of lead in facilities that cater to children shows our commitment to the safety and well-being of our Navy families.

Q2. Where is the testing going to take place?

A2. The Navy requires sampling and testing for lead in priority areas. A priority area is defined as primary and secondary schools, child development centers, Navy operated 24/7 group homes, and youth centers. The Navy is in the process of testing drinking water to ensure our water is above and beyond U.S. Environmental Protection Agency requirements. Testing does not extend to on or off base residences used for child-care

purposes under the Navy's Child Development Home program, or schools that are not owned or managed by Navy.

Q3. When will testing begin and when will it be completed?

A3. Navy policy for Lead in Priority Area sampling was issued on 08 FEB 2014 and the initial sampling was conducted by 2015 for all existing priority areas. Sampling is required every five (5) years under this policy.

Q4. Because you're testing in our area, does that mean something is wrong?

A4. No, this sampling is being done proactively on a regular basis. The health and safety of our Navy family is a top priority of the Navy's uniformed and civilian leadership; therefore, we are going above and beyond requirements to ensure the quality of the drinking water being provided.

Q5. Why is the Navy testing for lead?

A5. With the safety of our children our being top concern, we are performing additional testing for lead in drinking water in schools, youth centers, and child day care facilities aimed at reducing potential exposure to lead in drinking water. In the United States, the U.S. Environmental Protection Agency recommends, but does not require, testing for lead in drinking water in schools and day care centers. Navy policy as of February 2014 does require this testing in all priority areas at Navy installations throughout the world in the best interests of the children, parents, and staff we serve.

Q6. Who conducts this water sampling test?

A6. Navy environmental personnel and/or a Navy environmental contractor will collect the samples. The water samples will be tested by an independent certified laboratory.

Q7. When was the last time this test was done?

A7. Navy policy for Lead in Priority Area sampling was issued on 08 FEB 2014 and the initial sampling was conducted by 2015 for all existing priority areas. Sampling is required every five (5) years under this policy.

Q8. Are you testing in Navy housing on and off base?

A8. No, priority areas do not include private residences/housing. Lead in residences is monitored under the Lead and Copper Rule by the water provider. The drinking water for housing locations on base is provided by {provide local water provider} and off base is from municipal water supply systems {confirm for specific location}. {If available provide most recent lead monitoring results.}

Notification:

Q9. How will we know if there is a problem with our water?

A9. Each installation will provide information before, during, and after sampling and testing has been conducted to ensure the widest dissemination of information. We are committed to sharing test results with parents as soon as possible. Results will be

publicized by the Navy Installation Commanding Officer. All updates and testing results can be found on the local website {provide URL}.

Q10. Where will I find out information about water in my home/child's school etc.?

A10. For the Lead in Priority Area sampling, each installation will provide information before, during, and after sampling and testing is conducted to ensure the widest dissemination of information. The Navy is committed to sharing test results with parents as soon as possible. Results will be publicized by the Navy installation commanding officer. All updates and testing results can be found at the local installation's command website {provide URL}.

Lead in residences is monitored under the Lead and Copper Rule monitoring by the water provider. Other water quality concerns should be addressed by the water provider {provide name/contact for provider}.

Q11. How does one receive notice of results?

A11. Results will be publicized by the Navy's Installation Commanding Officer once lab results have been received and evaluated. Any actions required will be outlined in the communication.

Mitigation:

Q12. What steps will be taken if something is found?

A12. If initial screening results exceed the U.S. Environmental Protection Agency's (EPA) recommended lead screening level of 20 parts per billion (ppb) the outlet will be immediately taken out of service and a remedy will be implemented as recommended by EPA guidelines.

Q13. What are the options available for reducing lead levels in the drinking water if they are found?

A13. Some routine, short-term and long-term steps to help mitigate the problem include:

Routine Control Measures

- Use only cold water for food and beverage preparation. Hot water will dissolve lead more quickly than cold water and is likely to contain increased lead levels. If hot water is needed, it should be taken from the cold water faucet and heated on a stove or in a microwave oven.
- Users (children and staff) should run the faucet water before drinking; at child care centers, the staff should run the faucet and drinking fountain water before students arrive, so they are drinking water that has not been in contact with the faucet interior. Faucets are often a major source of lead in drinking water.
- Clean debris from all accessible screens frequently. If you discover sediments in faucet screens, have the sediments tested for lead and continue to clean your screens frequently, even if the analysis finds no lead.

- Placard bathroom sinks with notices that water should not be consumed. You should use pictures if there are small children using bathrooms.
- Shut off problem outlets

Potential Permanent Remedies

After obtaining an understanding of the water supply and the lead conditions in a facility (as a result of testing), permanent treatment options will be examined by the facilities maintenance team. Potential actions taken may include:

- Check grounding wires. Electrical current may accelerate the corrosion of lead in piping materials.
- Lead pipe replacement. Lead pipes within the school and those portions of the lead service lines under the water supplier's jurisdiction can be replaced.
- Reconfigure plumbing. In some facilities, the plumbing system may be modified so that water supplied for drinking or cooking is redirected to bypass sources of lead contamination.
- Automated flushing. Time-operated solenoid valves can be installed and set to automatically flush the main pipes (headers) of the system.
- Bottled water. If other treatment fails or is impractical, bottled water listed in the U.S. Army Public Health Center directory of approved sources can be purchased for consumption (<https://vets.amedd.army.mil/86257B8D004A4B6C/PHC>).
- Use lead-free materials. Make sure that any plumber who does repair or replacement work on the facility's plumbing system uses only "lead-free" solders and other materials.
- Shut off problem outlets.
- Replace outlets, fittings, and pipes with materials that meet NSF 61 standards.
- Reduce lead levels at the tap. For example, install point-of-use (POU) devices that meeting the NSF Standard 53 for lead removal.

Q14. What preventative measures are being taken at locations until you can test them?

A14. Employees are being trained on precautionary procedures to be taken at facilities yet to be tested. This includes measures such as:

- Using only cold water for food and beverage preparation. Hot water will dissolve lead more quickly than cold water and is likely to contain increased lead levels. If hot water is needed, it should be taken from the cold water tap and heated on a stove or in a microwave oven.
- Running the water before drinking or staff running the water before children arrive, so they are drinking water that has not been in contact with the faucet interior. Faucets are often a source of lead in drinking water.

Exposure:

Q15. How can someone be exposed to lead?

A15. The greatest exposure to lead is by swallowing or breathing in lead paint chips and dust. Typically, the lead in plumbing pipes, solder and other plumbing materials, such as water coolers and faucets, is the source of lead in drinking water. {If applicable, have contact information available for any previously performed lead in paint testing at the facility}

Q16. What is the potential harm to my child?

A16. Parents should call (800) TRICARE (874-2273) Option 1 for answers to specific questions and concerns. As always, if you have concerns about the health of your child, you should contact your health care provider. According to the Center for Disease Control, most studies show that exposure to lead contaminated water alone would not be likely to elevate blood lead levels in most adults, even exposure to water with a lead content close to the U.S. Environmental Protection Agency's action level for lead. Risk will vary, however, depending on the individual, the circumstances, and the amount of water consumed. Lead poses a health risk to young children because growing children absorb lead more rapidly.

Q17. What is lead?

A17. Lead is a naturally occurring toxic metal that is harmful if inhaled or swallowed. Lead can be found in varying amounts in air, soil, dust, food, and water.

Q18. What health risks are associated with lead exposure?

A18. Lead poses a health risk to young children because growing children absorb lead more rapidly. Exposure to lead can result in delays in physical and mental development. Lead exposure would have significantly less of an effect on an adult. Specific health questions or testing should be directed to preventative medicine or a health care provider.

According to the Center for Disease Control, there are no thresholds for adverse health effects in young children that have been demonstrated. All sources of lead exposure for children should be controlled or minimized.

Q19. What is the potential harm to young children who may have washed their hands in one of the sinks and then put their hands in their mouths?

A19. Minimal. If parents or staff members have concerns, they are encouraged to call the Tricare nurse line at (800) TRICARE (874-2273) option 1 or talk to their health care provider.

Q20. Who is at risk to lead exposure?

A20. The greatest risk posed is to children age 6 and under. Pregnant women and nursing mothers should avoid exposure to lead to protect their children. Specific health questions should be directed to the Tricare nurse line at (800) TRICARE (874-2273) option 1 or your health care provider.

Q21. How much lead in drinking water is too much?

A21. In school or child-care settings, U.S. Environmental Protection Agency guidance has set a screening level of 20 ppb. When results show lead levels exceeding 20 ppb, those fountains and outlets will be taken out of service until corrective actions take place.

Risk will vary, however, depending on the individual, the circumstances, and the amount of water consumed.

Q22. How can someone be exposed to lead?

A22. The greatest risk of exposure to lead is swallowing or breathing in lead paint chips and dust. {check to see if lead paint test was performed at the facility prior to addressing this}. Lead most frequently gets into drinking water by leaching from plumbing materials and fixtures as water moves through the water pipes. A facility may have elevated lead levels due to plumbing materials and water use patterns. Because lead concentrations can change as water moves through the water pipes, the best way to know if a facility might have elevated levels of lead in its drinking water is by testing the water in that facility. Testing facilitates an evaluation of the plumbing and helps target corrective actions, as necessary.

Q23. I'm concerned my child may be overexposed to lead in the drinking water at the School, CDC, or Youth Center. Can I get my child tested for lead exposure? Where?

A23. Yes, parents who have concerns about the health of their child, or child-care staff who are concerned about their health should contact their health care provider, or contact the Tricare nurse line at (800) TRICARE (874-2273) option 1 for advice on appropriate actions.

Q24. If levels of lead are found in the drinking water at one of the facilities, should we expect any health effects?

A24. Parents who may have concerns about the health of their child, or child-care staff who are concerned about their health should contact their health care provider. Additionally, military parents who have questions can call the Tricare nurse line at (800) TRICARE (874-2273) Option 1.

Q25. How does lead get into the water?

A25. Lead potentially enters the water ("leaches") through contact with the plumbing. Lead leaches into water through corrosion of pipes, solder, fixture, faucets, and fittings. The amount of lead in your water also depends on the types and amounts of minerals in the water, how long the water stays in the pipes, the amount of wear in the pipes, the water's acidity and its temperature. When water sits in leaded pipes/fixtures for several hours, the lead can leach into the water.

Policy/Regulatory:

Q26. What is the U.S. Environmental Protection Agency recommended acceptable level?

A26. The U.S. Environmental Protection Agency's recommended guidance for priority areas advises a screening level of 20 parts per billion (ppb).

Q27. What is a priority area?

A27. A priority area is defined as primary and secondary schools, child development centers, Navy-operated 24/7 group homes, and youth centers. Testing does not extend to on or off base residences used for child-care purposes under the Navy's Child Development Home program, or schools that are not owned or managed by Navy or DoD.

Q28. What is the federal law for testing for lead?

A28. The Lead and Copper Rule, under the Safe Drinking Water Act, requires public water suppliers to monitor for lead in drinking water and to provide treatment for corrosive water if lead or copper are found at unacceptable levels. However, there is no federal law requiring testing of drinking water specifically in schools or priority areas. However, Navy leadership decided to adopt the U.S. Environmental Protection Agency guidelines as policy. This proactive approach to the identification and elimination of potential sources of lead in facilities that cater to children shows our commitment to the safety, and well-being of our Navy families worldwide.

Q29. What is the Lead and Copper Rule?

A29. The Lead and Copper Rule, under the Safe Drinking Water Act, requires public water suppliers to monitor for lead and copper in drinking water and to provide treatment for corrosive water if lead or copper are found at unacceptable levels. The number of sample locations is based on the population served by the water supplier. Testing frequency ranges from every 6 months to every 3 years based on past monitoring results. Sample locations are selected based on criteria such as the age of a facility, type of pipe leading to the facility, and whether or not the facility is residential.

Q30. Is there any relation between this lead testing and testing the Navy is conducting for PFCs?

A30. No, there is no relation between the two policies.

APPENDIX B - Child Development Center/Youth Center/School
Drinking Water Sampling for Lead
Procedures and Timeline

Task		Responsibility	Days after (before) sampling event	Comments
Preparation for Sampling (P)				
P1	Brief leadership and preventative medicine authority (PMA)	Installation N45	(35)	Provide overview of Lead in Priority Area Guidance and 3Ts from EPA for ICO/PAO/MWR/PWO/IWQB/OGC/PMA.
P2	Notify regional and external stakeholders	Regional N00	(30)	Inform stakeholders of LIPA sampling, schedule, and communications plan.
P3	Coordinate with facility director and visit facility to inventory water fixtures	Installation N45	(28)	Survey facility for water fixtures that are or could be used for drinking, food preparation, washing, or other activities that could result in ingestion.
P4	Develop Sampling Plan	Installation N45	(21)	Using Appendix E of this guidance, develop/confirm the complete list of water fixtures with proposed sampling dates and times. Provide Plan to the installation PMA for routing and approval to the region PMA.
P5	Review and approve Sampling Plan	Regional N45	(18)	Review/approve the sampling plan with concurrence from the CDC/CDGH/YC Director. Coordinate plan approval with the region's PMA.
P6	Develop public awareness strategy (Communication Plan)	PAO	(16)	PAO (Installation/Region) provides initial PA strategy with concurrence of stakeholders. Regional PAO coordinates PMA/CHINFO/CMC for approval on PA approach
P7	Finalize Sampling Plan	Installation N45	(15)	Finalize plan based on comments from P5; submit to ICO/Region/PMA
P8	Draft Parent/Staff Notification Letter	Installation N45	(15)	Using Appendix F of this guidance, develop draft letter and provide to PAO/ICO/PMA.
P9	Review Parent/Staff Notification Letter	ICO/PAO/PMA	(13)	Review/revise the notification letter.
P10	Notify staff and parents of sampling	ICO	(10)	Sign/distribute letter to staff and parents using template. Inform PAO/PMA.

APPENDIX B - Child Development Center/Youth Center/School
 Drinking Water Sampling for Lead
 Procedures and Timeline

Task		Responsibility	Days after (before) sampling event	Comments
P11	Meet with CDC/CDGH/YC director	Installation N45	(7)	Meet with facility director to prepare for sampling. Preparation includes education of personnel (including cleaning staff) to stop using water after identified closure hour to allow at least 8 but no more than 18 hours of stagnation prior to sampling.

APPENDIX B - Child Development Center/Youth Center/School
Drinking Water Sampling for Lead
Procedures and Timeline

Task		Responsibility	Days after (before) sampling event	Comments
Sampling and Results (S)				
S1	Secure fixtures	Installation N45	(1)	Secure fixtures and label bottles for sampling as identified in the plan. Fixtures can be secured by facility director or FMS POC, as coordinated.
S2	Conduct sampling at identified fixtures	Installation N45	0	Conduct first draw samples as identified in sampling plan. Lab result turnaround time should be 14 days.
S3	Review results	Installation N45	15	Review results and determine follow-up needed for samples with >20 ppb.
S4	Notify stakeholders and secure fixtures	Installation N45	16	Notify ICO and Region of all results. Secure any fixtures with levels >20 ppb. Explain verbally and in writing to CDC/CDGH/YC Staff requirements for these fixtures. Begin weekly SITREPs to update the chain of command of any corrective actions. Region immediately notifies Echelon II CNIC and NAVFAC N45.
S5	Schedule follow-up sampling	Installation N45	16	Schedule follow-up sampling for any fixture with >20 ppb. Follow-up samples shall be collected per CNIC guidance.
S6	Review public awareness strategy for corrective action strategy	PAO	16	PAO (Installation/Region) provides initial PA strategy with concurrence of stakeholders. Regional PAO coordinates CHINFO/CMC/PMA for approval on PA approach and provides strategy to CNIC PAO for review.
S7	Conduct follow-up sampling at identified fixtures	Installation N45	21	Retrain staff as needed to ensure fixtures are left stagnant at least 8 but no more than 18 hours prior to sampling. Lab results turnaround time should be 3 days.
S8	Review follow-up sampling results	Installation N45 and local PMA	25	Review results with local PMA using EPA guidance to determine source of lead and recommended corrective actions. Fixtures must remain secure until corrective actions are complete.
S9	Finalize and execute PA strategy	PAO	26	Finalize any FAQs, press releases, articles, etc. as identified. Prepare staff for interviews (as required).

APPENDIX B - Child Development Center/Youth Center/School
 Drinking Water Sampling for Lead
 Procedures and Timeline

Task		Responsibility	Days after (before) sampling event	Comments
S10	Notify stakeholders of results and recommendations	Installation N45 and PAO	26	Notify ICO/Region/PMA/PAO/CDC/CDGH/YC Director of results. Copies of notifications shall be provided to CNIC and NAVFAC N45 for awareness
S11	Notify staff and parents of results	ICO	26	Deliver letters (by hand for facilities with results >20 ppb) and conduct info sessions as necessary.
S12	Post results to website	PAO	26	Post results on Installation website (public)
S13	Train staff on lead minimization procedures	Installation N45	26	Train staff on lead minimization procedures.

APPENDIX B - Child Development Center/Youth Center/School
Drinking Water Sampling for Lead
Procedures and Timeline

Task		Responsibility	Days after (before) sampling event	Comments
Corrective Actions (C)				
C1	Initiate corrective actions	PWO	26	Ensure corrective actions are completed as planned in S8. Continue weekly SITREPs until resampling is completed.
C2	Schedule post-remediation sampling	Installation N45	TBD	Prepare all personnel for follow-up sampling as necessary. Repeat notification steps in P8, P9, & P10.
C3	Conduct post-remediation sampling	Installation N45	TBD	Collect post-remediation sampling at identified fixtures. Fixtures shall remain secured until results are reviewed.
C4	Review post-remediation sampling results	Installation N45	TBD	Fixtures with ≤ 20 ppb can be placed back into service. Additional corrective actions will be necessary per EPA guidelines if levels are still > 20 ppb.
C5	Notify stakeholders of results and recommendations	Installation N45	TBD	Notify ICO/Region/PMA/CNIC N45/NAVFAC N45/CDC/CDGH/YC Director of results.
C6	Notify staff and parents of corrective actions	ICO	TBD	Draft parent/staff notification letter (see Appendix F) to notify of completed actions. Upload notifications and results to website. Copies shall be provided to CNIC/NAVFAC N45

APPENDIX D - Sample Identification

SAMPLE ID FORMAT:

Installation ID - Building # - Location ID- Outlet ID - Sample Type ID

e.g., NSAA- A332- HALLFloor2-WFC-FD

INSTALLATION ID	DESCRIPTION
NSAA	NAVY SUPPORT ACTIVITY ATLANTIS
AOLF	ATLANTIS OUTLYING LANDING FIELD
RRA	REMOTE RADAR STATION ATLANTIS

LOCATION ID	DESCRIPTION (CAN BE AMENDED BY FACILITY SPECIFIC INFO)
K	KITCHEN
HERM	HOME ECONOMIC ROOM
LOUNGE	TEACHER'S LOUNGE
NURSE	NURSE'S OFFICE
RM	CLASSROOM
BATH	BATHROOM
UT	UTILITY ROOM
HOSE	HOSE ATTACHMENT
HALL	HALLWAY

OUTLET ID	DESCRIPTION
K	KITCHEN TYPE SINK USED FOR FOOD PREP OR WASHING DISHES
HHW	HIGH HAND WASHING FAUCET (INTENDED FOR ADULTS)
LHW	LOW HAND WASHING FAUCET (INTENDED FOR TODDLERS)
HWCMB	HANDWASHING FAUCET FROM COMBINATION SINK
ICE	ICE MAKER
TB	TEETH BRUSHING FAUCET (if no teeth brushing occurs, use applicable hand washing ID)
WFC	WATER FOUNTAIN (COOLER)
WFB	WATER FOUNTAIN (BUBBLER)
WFCMB	WATER FOUNTAIN OUTLET FROM COMBINATION SINK
...(A, B, C,...)	ASSIGN LETTER IF MORE THAN ONE OUTLET IS IN SAME LOCATION (START FROM LEFT TO RIGHT)

SAMPLE TYPE ID	DESCRIPTION
FD	FIRST DRAW
2FD	SECOND FIRST DRAW
FF30	FOLLOW UP FLUSH (30 SEC. AFTER OPENING OUTLET FOR FIRST DRAW)
FF15	FOLLOW UP FLUSH (15 MIN FLUSH FOR WATER COOLER ONLY)

APPENDIX E - Sample Summary Results Table
Priority Areas Lead Testing and Corrective Actions (MONTH YEAR)
INSTALLATION Child Development Center/ Youth Center/ School NAME
Building NUMBER

SAMPLING LOCATION DESCRIPTION				INITIAL SAMPLING RESULTS			RE-SAMPLING RESULTS			CORRECTIVE ACTIONS	POST REMEDIATION SAMPLING RESULTS	
CATEGORY [Enter water's intended use]	SAMPLE ID	Outlet Description [Enter, as a minimum, room number and type of outlet; include filter identification and whether a motion sensor faucet or blended water, as applicable]	Comments [Provide, for example, whether filter was removed, staining was present, any identifying marks]	Lead Screening Level of 20ppb					Description [Enter brief description of remediation activities; for example, replace fixture, add a point of use device, check grounding wires, replace lead piping, reconfigure piping, permanently close outlet, implement aerator maintenance program]		Recommended Level = 20ppb	
				First Draw (ppb) [Enter non-detect/ numeric value]	Retest required? [Enter YES/NO]	Date Fixture Secured? (See Note 1) [Enter N/A if First Draw is ≤ 20ppb; otherwise enter mm/dd/yyyy]	Water Fountain 15 min. Follow up Flush Sample - Collected day before First Draw Sampling (ppb) [Enter non-detect/ numeric value]	First Draw (ppb) [Enter non-detect/ numeric value]		Follow up Flush - Collected 30 seconds after First Draw Sampling (ppb) [Enter non-detect/ numeric value]	First Draw (ppb) [Enter non-detect/ numeric value]	Follow up Flush - Collected 30 seconds after First Draw Sampling (ppb) [Enter non-detect/ numeric value]
SAMPLING DATE RESULTS DATE				mm/dd/yyyy			mm/dd/yyyy	mm/dd/yyyy	mm/dd/yyyy		mm/dd/yyyy	mm/dd/yyyy
COOKING				non-detect	NO	N/A	N/A	N/A	N/A	Routine Control Measures Only	N/A	N/A
COOKING				non-detect	NO	N/A	N/A	N/A	N/A	Routine Control Measures Only	N/A	N/A
COOKING				non-detect	NO	N/A	N/A	N/A	N/A	Routine Control Measures Only	N/A	N/A
WASHING				non-detect	NO	N/A	N/A	N/A	N/A	Routine Control Measures Only	N/A	N/A
WASHING				non-detect	NO	N/A	N/A	N/A	N/A	Routine Control Measures Only	N/A	N/A
WASHING				non-detect	NO	N/A	N/A	N/A	N/A	Routine Control Measures Only	N/A	N/A
WASHING				non-detect	NO	N/A	N/A	N/A	N/A	Routine Control Measures Only	N/A	N/A
WASHING				non-detect	NO	N/A	N/A	N/A	N/A	Routine Control Measures Only	N/A	N/A
WASHING				non-detect	NO	N/A	N/A	N/A	N/A	Routine Control Measures Only	N/A	N/A
WASHING				non-detect	NO	N/A	N/A	N/A	N/A	Routine Control Measures Only	N/A	N/A
WASHING				non-detect	NO	N/A	N/A	N/A	N/A	Routine Control Measures Only	N/A	N/A
WASHING				non-detect	NO	N/A	N/A	N/A	N/A	Routine Control Measures Only	N/A	N/A
WASHING				non-detect	NO	N/A	N/A	N/A	N/A	Routine Control Measures Only	N/A	N/A

APPENDIX E - Sample Summary Results Table
 Priority Areas Lead Testing and Corrective Actions (MONTH YEAR)
 INSTALLATION Child Development Center/ Youth Center/ School NAME
 Building NUMBER

SAMPLING LOCATION DESCRIPTION				INITIAL SAMPLING RESULTS			RE-SAMPLING RESULTS			CORRECTIVE ACTIONS	POST REMEDIATION SAMPLING RESULTS	
CATEGORY [Enter water's intended use]	SAMPLE ID	Outlet Description [Enter, as a minimum, room number and type of outlet; include filter identification and whether a motion sensor faucet or blended water, as applicable]	Comments [Provide, for example, whether filter was removed, staining was present, any identifying marks]	Lead Screening Level of 20ppb					Description [Enter brief description of remediation activities; for example, replace fixture, add a point of use device, check grounding wires, replace lead piping, reconfigure piping, permanently close outlet, implement aerator maintenance program]		Recommended Level = 20ppb	
				First Draw (ppb) [Enter non-detect/ numeric value]	Retest required? [Enter YES/NO]	Date Fixture Secured? (See Note 1) [Enter N/A if First Draw is ≤ 20ppb; otherwise enter mm/dd/yyyy]	Water Fountain 15 min. Follow up Flush Sample - Collected day before First Draw Sampling (ppb) [Enter non-detect/ numeric value]	First Draw (ppb) [Enter non-detect/ numeric value]		Follow up Flush - Collected 30 seconds after First Draw Sampling (ppb) [Enter non-detect/ numeric value]	First Draw (ppb) (See note 2) [Enter non-detect/ numeric value]	Follow up Flush - Collected 30 seconds after First Draw Sampling (ppb) [Enter non-detect/ numeric value]
SAMPLING DATE				mm/dd/yyyy			mm/dd/yyyy	mm/dd/yyyy	mm/dd/yyyy	mm/dd/yyyy		
RESULTS DATE				mm/dd/yyyy			mm/dd/yyyy	mm/dd/yyyy	mm/dd/yyyy	mm/dd/yyyy		
WASHING				non-detect	NO	N/A	N/A	N/A	N/A	Routine Control Measures Only	N/A	N/A
WASHING				non-detect	NO	N/A	N/A	N/A	N/A	Routine Control Measures Only	N/A	N/A
WASHING				non-detect	NO	N/A	N/A	N/A	N/A	Routine Control Measures Only	N/A	N/A
WASHING				non-detect	NO	N/A	N/A	N/A	N/A	Routine Control Measures Only	N/A	N/A
WASHING				non-detect	NO	N/A	N/A	N/A	N/A	Routine Control Measures Only	N/A	N/A
WASHING				non-detect	NO	N/A	N/A	N/A	N/A	Routine Control Measures Only	N/A	N/A
WASHING				non-detect	NO	N/A	N/A	N/A	N/A	Routine Control Measures Only	N/A	N/A
WASHING				non-detect	NO	N/A	N/A	N/A	N/A	Routine Control Measures Only	N/A	N/A
WASHING				non-detect	NO	N/A	N/A	N/A	N/A	Routine Control Measures Only	N/A	N/A
WASHING				non-detect	NO	N/A	N/A	N/A	N/A	Routine Control Measures Only	N/A	N/A
WASHING				non-detect	NO	N/A	N/A	N/A	N/A	Routine Control Measures Only	N/A	N/A
WASHING				non-detect	NO	N/A	N/A	N/A	N/A	Routine Control Measures Only	N/A	N/A

Notes:

¹ Affected outlets were immediately secured after receiving verbal communication from the lab on results exceeding the recommended level of 20ppb.

² Post-remediation sampling was initially conducted on [ENTER DATE]. Additional [CORRECTIVE ACTIONS DESCRIPTION] were implemented and final results below recommended level of 20ppb for sample collected on [ENTER DATE] are shown on the table.

Table 2. Summary Statistics

CATEGORY	INITIAL SAMPLING RESULTS	RE-SAMPLING RESULTS			POST REMEDIATION RESULTS
	Lead Screening Level of 20ppb				
	First Draw (ppb)	Water Fountain Follow up Flush Sample - Collected day before First Draw Sampling (ppb)	First Draw (ppb)	Follow up Flush - Collected 30 seconds after First Draw Sampling (ppb)	First Draw (ppb)
Total Drinking	17	0	0	0	0
Total Drinking > 20 ppb	0	0	0	0	0
Total Cook	3	0	0	0	0
Total Cook > 20 ppb	0	0	0	0	0
Total Washing	52	0	0	0	0
Total Washing > 20 ppb	0	0	0	0	0
Total Samples	72	0	0	0	0
Total Samples > 20 ppb	0	0	0	0	0

**Staff, Parent and Caregiver
Sampling Program Announcement Letter**

Replace yellow-highlighted text with the appropriate information. Delete blue-highlighted instructional text.

Date

Dear Parent or Caregiver:

The safety and wellness of youth at our **Child Development Centers (CDC), Schools, and Youth Centers (YC)** is one of my top priorities. As Commanding Officer of the base, I would like to inform you of plans we are undertaking to maintain the center's healthy environment.

Children are routinely evaluated for lead exposure as a part of their well child check-ups.

Exposure to lead is a concern because it is a toxic metal that has a range of adverse health effects, from lowered birth weight and slowed physical and mental development in infants to lowered IQ levels, impaired hearing, reduced attention span, and poor classroom performance in young children.

To reduce children's potential exposure to lead from facility drinking water we are taking a number of steps. These include testing drinking water for lead; disseminating results to parents, students, staff, and other interested stakeholders; and taking appropriate and necessary actions to correct any problems identified.

In the U.S., the Environmental Protection Agency (EPA) recommends, but does not require, testing for lead in drinking water in schools and day care centers. However, Navy policy requires this testing program in the best interest of all the children, parents, and staff we serve.

As we proceed:

- We want to ensure that (school/child day care/youth center) parents and staff are aware of the risks of lead poisoning and the means of mitigating those risks.
- We want to highlight that our testing will be conducted at CDC drinking water fountains, coolers, and outlets where children and staff have the potential to use the water for drinking, cooking and washing. .
- We will inform you of the results once testing is complete and we will keep you informed of any actions we're taking to minimize your child's potential exposure to lead in drinking water.

Once complete, testing results from your **(school/child daycare center/youth center)** will also be available at the **[Region/Installation]** Web site at:

APPENDIX F – Example Notification Letters

**Staff, Parent and Caregiver
Sampling Program Announcement Letter**

Replace yellow-highlighted text with the appropriate information. Delete blue-highlighted instructional text.

Provide Region/Installation Website link here

To learn more about lead in drinking water in schools and day care centers and additional water quality resources please visit:

EPA (lead in drinking water in schools and day care centers):

<https://www.epa.gov/dwreginfo/drinking-water-schools-and-childcare-facilities>

Annual water quality report:

Provide Site Specific Links here

Drinking Water Taste, Odor, and Color:

<http://water.epa.gov/drink/contaminants/secondarystandards.cfm>

<http://www.mass.gov/eea/docs/dep/water/drinking/alpha/a-thru-h/color.doc>.

If you have any immediate concerns or would, please contact us at (telephone) or (email address).

If you have any health related questions or concerns about lead exposure, you are encouraged to contact your health care provide or, if you are a TRICARE beneficiary, use the REGION Appointment Center to schedule an appointment with your primary care provider at 1-866-645-4584

We are committed to keeping you informed every step of the way as we complete the testing process at our school.

Sincerely,

Installation CO

**TEMPLATE LETTER – STAFF/PARENTAL NOTIFICATION
(BELOW 20 PPB)**

Replace yellow-highlighted text with the appropriate information. Delete blue-highlighted instructional text.

From: Commander, **Installation Name**
To: Parents and Staff

Subj: **Name** Child Development Center's Drinking Water

1. The Navy is committed to maintaining safe drinking water on its installations. Our water distribution system is regularly tested for lead and in compliance with the Safe Drinking Water Act.
2. Lead exposure is a particular concern for children. Lead in drinking water may come from plumbing inside buildings including fittings, solder, water fountains/coolers, or water faucets. Therefore, the Environmental Protection Agency (EPA) recommends, but does not mandate, that we test the lead content of drinking water in priority areas such as youth centers (YCs) and child development centers (CDCs). The Navy has adopted the recommendation as policy. Testing at the **Name** Child Development Center was conducted on **Date**.
3. I am pleased to report that all drinking water intended for consumption, to include drinking water and water intended for cooking or washing, is below the EPA-recommended lead screening level of 20 parts per billion (ppb).
4. Navy environmental personnel conducted this testing at the **Name** CDC following Navy and EPA guidelines. Samples from various locations in the CDC were sent to **a state-certified or accredited** laboratory for analysis.
5. We also tested other sinks used for washing. These fixtures too were below recommended screening levels for lead in schools and day care centers. In all, **##** samples were taken and tested.
6. A copy of all test results is enclosed for information. You can also see a copy of our water testing results at the **Name** CDC, which is open Monday to Friday (**Hours**).
 - a. To learn more about lead in drinking water in schools and day care centers visit the following EPA website: <https://www.epa.gov/dwreginfo/lead-drinking-water-schools-and-child-care-facilities>.
 - b. To learn more about your home's public water supplier, see their annual water quality report: **Region-specific links**.
7. While lead in the drinking water at these facilities meets EPA recommended screening levels for schools and daycare centers, if you have any health related questions or concerns about lead

APPENDIX F – Example Notification Letters

**TEMPLATE LETTER – STAFF/PARENTAL NOTIFICATION
(BELOW 20 PPB)**

Replace yellow-highlighted text with the appropriate information. Delete blue-highlighted instructional text.

exposure generally, you are encouraged to contact your health care provider or, if you are a TRICARE beneficiary, use the **Region** Appointment Center to schedule an appointment with your primary care provider at 1-866-645-4584.

Sincerely,

CO Name

Captain, United States Navy
Commanding Officer

Enclosure:

1. Complete Test Results

**TEMPLATE LETTER – STAFF/ PARENTAL RESULTS NOTIFICATION
(ABOVE 20 PPB)**

Replace yellow-highlighted text with the appropriate information. Delete blue-highlighted instructional text.

From: Commander, **Installation Name**

To: Parents and Staff

Subj: **Name** Child Development Center’s Drinking Water

The safety and wellness of children at our Child Development Centers (CDCs), Schools, and Youth Centers (YCs) are my top priority. In my earlier letter announcing our lead in drinking water testing program, I told you we are testing all water outlets that could potentially be used for cooking, washing, or drinking at our CDCs and YCs.

This week, we received the results of recent water testing of **##** CDC drinking water outlets. Of these, **##** outlets tested higher than 20 parts per billion (ppb) screening level for lead, which is a level designated by the Environmental Protection Agency (EPA) to take action with additional testing and corrective measures. Lead in drinking water may come from the existing plumbing inside buildings including fittings, solder, water coolers, or water faucets. Lead is more likely to be found in drinking water when the water has not been run for an extended period of time and has been sitting in the system.

The lead levels were higher than the EPA-recommended screening level at water fountains/coolers in rooms **X, Y, and Z** and at sinks in rooms **X, Y, and Z**. After receiving the test results, we immediately took these water sources out of service. Details on the corrective actions we have taken to reduce the amount of lead in water at these fixtures are discussed in the attached Overview of Results & Actions. Also enclosed are Complete Test Results and a Floor Plan of the **CDC/YC** that indicates the location of the fixtures that had lead levels higher than the EPA-recommended screening level.

I know this issue will generate more questions than this letter can answer. As such, I invite you to attend an informational forum that I will host at the **CDC/YC Date/Time**, as well as **Date/Time**. This will be an opportunity for you to speak with medical representatives, have your questions answered, and voice your concerns.

Here are some additional resources you may find informative:

EPA (lead in drinking water in schools and day care centers)

<https://www.epa.gov/dwreginfo/lead-drinking-water-schools-and-child-care-facilities>

Annual water quality report at your home:

Region-specific links

Drinking Water Taste, Odor, and Color:

APPENDIX F – Example Notification Letters

**TEMPLATE LETTER – STAFF/ PARENTAL RESULTS NOTIFICATION
(ABOVE 20 PPB)**

[https://www.epa.gov/dwstandardsregulations/secondary-drinking-water-standards-guidance-
nuisance-chemicals](https://www.epa.gov/dwstandardsregulations/secondary-drinking-water-standards-guidance-
nuisance-chemicals)

If you have any health questions or concerns, I encourage you to contact your health care provider or, if you are a TRICARE beneficiary, use the **Region** Appointment Center to schedule an appointment with your primary care provider at 1-866-645-4584.

Rest assured that my team and I will continue to monitor and test water quality at the **Name** CDC to ensure our drinking water lead levels are lower than EPA-recommended screening levels. I am committed to the safety and health of all personnel and family members using our facilities and will keep you updated on this issue.

Sincerely,

CO Name

Captain, United States Navy
Commanding Officer

Copy: CNIC N45, NAVFAC N45

Enclosures:

1. Overview of Results & Actions
2. Complete Test Results
3. Floor Plan of the **CDC/YC**

TEMPLATE – STAFF/PARENTAL SAMPLING RESULTS OVERVIEW

Replace yellow-highlighted text with the appropriate information. Delete blue-highlighted instructional text.

**Overview of Testing Results for Lead in Drinking Water
and Corrective Actions for
Installation Name CDC Name (Building ##)**

The Navy is committed to maintaining safe drinking water on its installations. City water supplied to the Navy and the Navy's water distribution system is regularly tested and in compliance with the Safe Drinking Water Act. Because lead exposure is a particular concern for children, and lead may be added to drinking water through the pipes, fittings, solder, and fixtures inside a building, the Environmental Protection Agency (EPA) recommends, but does not mandate, that we test the lead content of drinking water in priority areas such as youth centers (YCs), child development group homes (CDGHs), and child development centers (CDCs). The Navy has adopted the recommendation as policy.

Navy environmental personnel conducted lead testing at the Installation Name CDC in accordance with Navy and EPA guidelines. Samples from various locations in the CDC were sent to a state-certified or accredited laboratory for analysis.

At the Installation Name CDC Name, outlets used for drinking, cooking, and washing were tested. Out of ## samples collected, ## water outlets initially tested above the EPA-recommended screening level for lead in drinking water in schools and childcare centers of 20 parts per billion (ppb).

Customize as appropriate, adding in paragraphs as necessary to summarize the type/location of fixtures affected.

Two of the outlets that exceeded the EPA-recommended screening level of 20 ppb were water fountains located in rooms X and Y, which tested at ## ppb and ## ppb, respectively. Since follow-up testing indicated that the elevated levels of lead appeared to be caused by the components of the water fountains and upstream plumbing, these water fountains were disconnected and the pipes capped. New fountains and upstream plumbing have been installed. Testing conducted after implementation of these corrective measures shows that these fountains are below the EPA recommended screening level of 20 ppb.

The ## remaining outlets that exceeded 20 ppb were cooking sinks. These sinks were located in rooms X, Y, and Z. Follow-up sampling at these outlets was conducted after removing and cleaning the faucet aerators. A faucet aerator (or tap aerator) is often found at the tip of modern indoor water faucets. Without an aerator, water usually flows out of a faucet as one big stream. An aerator spreads this stream into many little droplets, which helps save water, provides uniform flow, and reduce splashing. However, the aerator and screen can trap debris which can accumulate lead.

TEMPLATE – STAFF/PARENTAL SAMPLING RESULTS OVERVIEW



After removing the faucet aerators, retesting showed that the sinks in rooms **X, Y, and Z** were below the EPA-recommended level. Further corrective measures (replacement of supply valves and supply piping) were implemented at the sinks in rooms **X and Y**, and follow-up sampling indicates that these sinks are also below the EPA-recommended screening level.

A copy of all test results is enclosed for your information. The test results are presented in two tables:

- Table 1 **Summary of Results** summarizes the data by category of use (e.g., drinking, cooking, washing).
- Table 2 **Summary Statistics** summarizes all the data.

A floor plan of the **Installation Name, CDC/YC Name** has also been included to show the locations for the fixtures that exceeded 20 ppb.

Table 1 provides a description of each sampling location using three columns; *Category*, *Sampling ID*, and *Outlet Description*. The *Category* column gives information about whether the outlet is used for drinking water (water fountain), cooking (food preparation), or washing (primarily hand-washing or brushing teeth). The *Sample ID* column is the identification used to label each sample bottle. The *Outlet Description* column contains additional information to describe the outlet sampled under each category.

The next set of columns in **Table 1** provide *Initial Sampling Results*, and for those locations that exceeded the recommended screening level of 20 ppb the *Re-sampling Results*.

EPA sampling protocol requires water to not be used for between 8 and 18 hours prior to first draw sampling. Therefore, *Initial Sampling Results* were from first draw samples collected early in the morning before the CDC opened and before any water was used. The *Initial Sampling Results* also indicate whether resampling is required and the date that fixtures greater than 20 ppb were secured. Outlets that exceeded 20 ppb are highlighted in yellow.

The *Re-sampling Results* includes columns for *First Draw* and flushing samples which help determine the source of lead. For cooking and washing outlets, **aerators were removed and cleaned before retesting**:

- If the lead concentration of 30 second flush sample resulted in lower than 20 ppb lead, the aerators were the source of lead and the outlet can be used for drinking if the aerators

TEMPLATE – STAFF/PARENTAL SAMPLING RESULTS OVERVIEW

are cleaned on a regular basis. The washing sinks in rooms **X, Y, and Z** fit in this category.

- If the lead concentration of the resampled first draw (but not the follow up 30 second flush) was greater than 20 ppb, the fixture was the source of lead. These fixtures can be used if water is flushed for 30 seconds before first use of the day or if the fixtures are replaced and retesting confirms that the new fixtures do not leach lead. The bathroom sink in room **X** fits in this category. The faucet, supply piping, and supply valve for this sink have been replaced, and follow-on testing shows that the results are less than 20 ppb.
- If the lead concentration of the sample following the 30 second flush was greater than 20 ppb and greater than the lead concentration of the first draw resample, the source of lead is the plumbing upstream of the outlet. These outlets should be disconnected unless upstream plumbing is replaced. The water fountains/coolers in rooms **X and Y** (which were disconnected and replaced with new fountains/coolers and upstream plumbing) as well as the bathroom sink in room X (which was secured by turning off the supply valve until supply piping and the supply valve could be replaced) fit in this category.

The *Corrective Actions* column describes actions that were taken to remediate the source of lead. In the event that fixtures or upstream piping are replaced (e.g. water fountains in rooms **X and Y** and bathroom sinks in rooms **X and Y**, there are columns for sampling data that confirms that the corrective actions were successful in reducing lead below 20 ppb.

To learn more about lead in drinking water in schools and day care centers visit the following EPA website: <https://www.epa.gov/dwreginfo/lead-drinking-water-schools-and-child-care-facilities>.

To learn more about your home’s public water supplier, see their annual water quality report: [Region-specific links](#)

To answer any questions you may have on the sampling program contact the **Installation Name** Public Affairs Officer at **Phone number**. If you have any health questions or concerns, you are encouraged to contact your health care provider or, if you are a TRICARE beneficiary, use the **Region** Appointment Center to schedule an appointment with your primary care provider at 1-866-645-4584.

Enclosures:

1. Overview of Results & Actions
2. Complete Test Results
3. Floor Plan of the **CDC/YC**

TEMPLATE LETTER – STAFF/PARENTAL POST-REMEDATION NOTIFICATION

Replace yellow-highlighted text with the appropriate information. Delete blue-highlighted instructional text.

From: Commander, **Installation Name**

To: Parents and Staff

Subj: **Name** Child Development Center’s Drinking Water

I want to make you aware of the latest developments regarding our efforts to address elevated lead levels in drinking water that were reported on **Date** at the **Installation Name CDC Name**.

Recall, that on **Date of Initial Notification Letter**, I informed you of the results of recent water testing of **## CDC** outlets. Of these, **##** outlets tested higher than 20 parts per billion (ppb) screening level for lead. This is a level recommended by the EPA to take action with additional testing and corrective measures. The Navy has adopted this recommendation as policy.

We recently completed all corrective measures, and additional testing show that the levels at the CDC are all below the EPA recommended screening level of 20 ppb.

Specifically, after the initial findings, we took the following corrective actions: **Customize as appropriate.**

- We removed the water fountains in room **##** and capped the pipes. We performed additional sampling to identify the source of the lead, and these results indicated that the building materials used in the plumbing system leading to the water coolers were the source of the lead contamination.
- We installed new water fountains and associated supply piping in room **##**. We conducted additional water sampling following these corrective measures, and results confirm that the water from these fountains is now below the EPA-recommended screening level of 20 ppb for lead.
- We conducted follow-up sampling of **##** faucets at washing sinks and confirmed the source of lead at **##** of the faucets (room **##**) was attributed to the faucet aerators. To correct this, we replaced the aerators and resampled these locations. Resampling results confirm that lead levels are now below EPA-recommended screening levels.
- In room **##**, results indicated that the faucets and/or plumbing materials were the source of lead contamination. We initially secured these sinks by closing the supply valves as we investigated and conducted permanent corrective actions.
- In room **##**, we replaced the supply piping and supply valves. In room **##**, we replaced the faucet, supply piping and supply valves. We conducted additional water sampling

TEMPLATE LETTER – STAFF/PARENTAL POST-REMEDATION NOTIFICATION

following these corrective measures, and results confirm that the water from these sinks is below the EPA-recommended screening level of 20 ppb for lead.

I've attached the complete set of test results, which include the list of sampling locations and the purpose of the water outlet (drinking fountain or sink). As described above, for those locations that exceeded the recommended screening level on the first test, we conducted a subsequent resampling. The attachment provides details on which outlets required corrective action and the actions taken. For outlets where corrective actions were implemented, the attachment also shows the results of subsequent sampling to confirm lead levels below 20 ppb. I've also enclosed a floor plan which delineates locations where initial water sampling results exceeded 20 ppb. All outlets are now below the EPA-recommended screening level.

For your information, I am also including links to additional drinking water quality resources:

EPA (lead in drinking water in schools and day care centers):

<https://www.epa.gov/dwreginfo/lead-drinking-water-schools-and-child-care-facilities>

Annual water quality report at your home:

[Region-specific links](#)

Drinking Water Taste, Odor, and Color:

<https://www.epa.gov/dwstandardsregulations/secondary-drinking-water-standards-guidance- nuisance-chemicals>

Please be assured that my team and I will continue to monitor and test water quality at the **Installation Name CDC Name** CDC to ensure our drinking water complies with EPA regulations. If you have questions or concerns, please bring them to the attention of the staff.

If you have any health related questions or concerns about lead exposure, you are encouraged to contact your health care provide or, if you are a TRICARE beneficiary, use the REGION Appointment Center to schedule an appointment with your primary care provider at 1-866-645-4584.

I am committed to the safety and health of all personnel and family members using our facilities and will keep you updated on this issue.

Sincerely,

CO Name

Captain, United States Navy

Copy: CNIC N45, NAVFAC N45

Enclosures:

APPENDIX F – Example Notification Letters

TEMPLATE LETTER – STAFF/PARENTAL POST-REMEDATION NOTIFICATION

1. Overview of Results & Actions
2. Complete Test Results
3. Floor Plan of the CDC/YC

Preventing Lead Problems: Routine Steps

To minimize exposure to lead in your facility, there are several things you can do on a routine basis.

These activities include:

1. Flush all drinking water outlets.

Flushing drinking water outlets is important because the longer water is exposed to lead pipes or solder, the greater the likelihood of lead contamination. At the start of each day, before using any water for drinking or cooking, flush the cold water faucet by allowing the water to **run for 30 seconds to one minute**. Do this at each drinking water outlet (including water fountains). Even if all your first-draw samples and flushed samples show low lead levels, there is still a possibility that lead may get into water that sits in your plumbing for long periods (such as during vacations or over long weekends). To be safe, on the first day back, flush all drinking water outlets prior to opening the facility.



2. Use only cold water to prepare food and drinks.

Hot water dissolves lead more quickly than cold water and is therefore more likely to contain greater amounts of lead. If hot water is needed, water should be drawn from the cold tap and heated. Use only thoroughly flushed water from the cold water tap for drinking and when making formula, juices, or foods.

3. Clean debris out of all water outlet screens on a regular basis.

Small screens on the end of a faucet (aerators) can trap sediments containing lead.

SECURED
DO NOT USE!

ENVIRONMENTAL
WATER SAMPLING BEING
TAKEN

APPENDIX I – CODEL Notification Template

**TEMPLATE EMAIL TO CODELS REGARDING
LEAD SAMPLING IN PRIORITY AREAS
(Delivery approximately XX XX)**

Replace yellow-highlighted text with the appropriate information. Delete blue-highlighted instructional text.

I wanted to provide you with information regarding some drinking water testing we are performing within **Installation/Region Name**, as this will be of interest to several military families, and also has potential media interest.

My staff initiated testing for lead in the drinking water at our **Installation** Schools, Child Development Centers (CDCs) and Youth Centers (YCs). This testing is in accordance with the Navy policy that requires lead testing of “high priority areas,” such as secondary schools and daycare centers, and, again, is beyond what is required under the Safe Drinking Water Act. Typically, lead in drinking water comes from the plumbing inside the schools or centers, including fittings, solder, water coolers, or water faucets rather than from the drinking water provided by the local water utility. Lead is more likely to be found in drinking water when the water has not been run for an extended period of time and has been sitting in the system.

We began testing in **Initial sampling date**. To date, **Number of facilities** experienced exceedances. **Provide a summary statement of exceedances**. All affected outlets were secured and additional sampling and corrective measures such as replacing faucets/fountains were implemented in accordance with EPA guidelines. **Provide information on any other corrective actions executed**.

In the event you are contacted by parents or the media, please be assured my staff and I are proactively engaged on many levels. I will keep you and your staff apprised of our plan as we move forward and am available to discuss should you have any questions.

Very Respectfully,

Name

RADM **Name**, USN

Commander, Navy Region **Location**

Phone number

PIPE VOLUME TABLE

Flush the estimated volume of water between the service connection and the sample tap. You can estimate the volume of water by using below Pipe Volume Table. EPA recommends selecting the pipe diameter that is one size larger than the actual pipe size, since pipe material thickness can vary, affecting the interior diameter and the actual volume of water. You can also estimate the volume by measuring the length and diameter of piping from tap to connection and the length and diameter of the service connection itself into a graduated beaker or cylinder to ensure that you have collected the correct volume, and then close the tap.

Pipe Volume Table (Volumes Listed in Liters)						
Pipe Length (Feet)	Pipe Diameter (Inches)					
	3/8	1/2	5/8	3/4	1	1-1/2
2	0.06	0.09	0.14	0.19	0.32	0.50
3	0.09	0.14	0.21	0.29	0.49	0.74
4	0.11	0.18	0.27	0.38	0.65	0.99
5	0.14	0.23	0.34	0.48	0.81	1.24
6	0.17	0.27	0.41	0.57	0.97	1.48
7	0.20	0.32	0.48	0.67	1.14	1.73
8	0.23	0.36	0.55	0.76	1.30	1.98
9	0.26	0.41	0.62	0.86	1.46	2.22
10	0.28	0.45	0.69	0.95	1.62	2.47
11	0.31	0.50	0.75	1.05	1.78	2.72
12	0.34	0.55	0.82	1.14	1.95	2.96
13	0.37	0.59	0.89	1.24	2.11	3.21
14	0.40	0.64	0.96	1.33	2.26	3.46
15	0.43	0.68	1.03	1.43	2.43	3.71
16	0.46	0.73	1.10	1.52	2.60	3.95
17	0.49	0.78	1.16	1.62	2.76	4.20
18	0.51	0.82	1.23	1.71	2.92	4.45
19	0.54	0.86	1.30	1.81	3.08	4.70
20	0.57	0.91	1.37	1.90	3.24	4.94
25	0.71	1.14	1.71	2.38	4.06	6.18
30	0.86	1.36	2.06	2.85	4.87	7.41
35	1.00	1.59	2.40	3.33	5.68	8.65
40	1.14	1.82	2.74	3.80	6.49	9.88
60	1.43	2.27	3.43	4.76	8.11	12.36

Notes:

1. Volumes can be added together for pipe lengths not listed.
2. A wide-mouthed 250mL bottled is filled up in approximately 12 seconds at steady flow.