

A Manual for
Assessing Lead In Drinking Water
in Arizona Schools and
Day Care Facilities



Janet Napolitano, Governor
Stephen A. Owens, ADEQ Director

ADEQ's Children's Environmental Health Project

TABLE OF CONTENTS

- Letter From ADEQ
- Introduction1
- What Are the Risks?2
- Assessment3
- Understand the Significance of Your Plumbing Profile4
- Determine Sampling Location6
- Before You Sample6
- Sampling Overview7
- Initial Screening Samples7
- Follow-up Screening8
- Sample Collection8
- Response Actions9
- Control Measures Recommended by ADEQ9
- Long-Term Remedies10-11
- Public Education12
- Mandatory Public Notice under LCCA12
- Public Notification Methods12
- Components of Effective Communication13-14
- Communication Tips14
- Sample Notification Letter15
- Legal Background and Requirements16
- Sources of Lead Information17-18
- Glossary19
- Appendix A Water Cooler Information20-21
- Appendix B Development of Sampling Plan22
- Appendix C Sample Record Keeping Form23
- Appendix D Maintenance Checklist24



Janet Napolitano
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ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Stephen A. Owens
Director

October 2004

Dear Interested Party:

The Arizona Department of Environmental Quality (ADEQ) has worked with Arizona municipal water providers to develop this document to assist in understanding, assessing, and addressing potential risks of lead in drinking water at schools and day care centers.

ADEQ's drinking water program ensures that water delivered to Arizona residents, businesses, institutions, schools, and day care centers is safe to drink. Drinking water customers are made aware of the quality of water they receive through annual water quality reports from their water supplier, and all suppliers are required to provide water that meets federal and state health-related standards, including those for lead.

Lead contamination can occur even if the facility's water provider is in compliance with drinking water regulations, however, because lead can leach from plumbing material after the water has reached a customer, such as a school or day care center.

Because of the recent issues with lead in drinking water in Washington D.C. many states across the country are working to increase awareness of the issue of lead in drinking water in schools and day care centers. Your school or day care center may not have any drinking water problems involving lead, but if you choose to assess your facility, this guidance will ensure the assessment is conducted properly and renders scientifically valid results upon which remedial actions, if necessary, can be taken.

For schools and day care centers, lead can be of particular concern because children are especially susceptible to the adverse health effects associated with lead and because schools and day care centers have extended periods of non-use, during which lead may leach out of plumbing and water fixtures into stagnant water within a building's plumbing system.

ADEQ recommends that schools and day care centers in Arizona utilize the information in this document to help ensure that Arizona's children grow and learn in the best possible environment.

Sincerely,



Stephen A. Owens
Director

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INTRODUCTION

This manual was developed by the Arizona Department of Environmental Quality to assist Arizona's schools and day care facilities to minimize the consumption of lead in drinking water by children and staff. It is our hope that Arizona school and day care administrators will review the manual and implement the suggested activities to reduce lead levels within their facility's plumbing system and at taps used for drinking water or food preparation.

ADEQ administers federal drinking water requirements for public water systems across Arizona. It is our responsibility to enforce the Safe Drinking Water Act by authority granted by the U.S. Environmental Protection Agency (EPA). Through our regulatory programs, water suppliers are required to provide water that meets federal and state health-related standards.

For lead, ADEQ is focusing in this document on water that is within the plumbing systems of schools and day care centers. Lead may be present in various parts of the plumbing system (such as lead solder, brass fixtures, and lead or galvanized pipes). It is absorbed by the water sitting in the plumbing system. The amount of lead, if any, found in a plumbing system will be dependent upon the materials from which the system was constructed and the pH of the water. While building age is an important consideration when evaluating the potential for elevated lead levels in drinking water, even new plumbing fixtures can leach lead into the drinking water.

The amount of contact time between water and any lead source is the greatest contributing factor to lead in drinking water. The longer water remains standing in the plumbing system, the more lead it can absorb from any lead sources present. For this reason, the lead concentration is at its highest when water has remained unused overnight or over a weekend. Additionally, factors such as water chemistry and temperature can affect the rate at which water absorbs lead.

WHAT ARE THE RISKS?

Children's health can be at risk from too much lead. Lead is a toxic metal known to be harmful to human health. Too much lead in the human body can cause serious damage to the brain, kidneys, nervous system and red blood cells. The greatest risk is for young children and pregnant women. Infants, whose diets consist of liquids, face the greatest risk in drinking water. Because of their size and rapid growth infants and small children may rapidly absorb any lead they consume.

The Centers for Disease Control and Prevention (CDC) says that the major source of lead exposure for children in the United States is lead-based paint and lead-contaminated dust found in older buildings. But lead in drinking water within schools and child care centers is also of concern in Arizona as well as other parts of our nation.

Children can be exposed to lead in many ways. It is important to consider all sources when determining overall exposure, because lower levels from multiple sources may potentially add up to a significant exposure. One way that lead can enter the human body is through drinking water. Some drinking water pipes, taps/outlets, solder and other plumbing components may contain lead. Lead in the plumbing may leach into water and pose a health risk. The longer water remains in contact with leaded plumbing, the more opportunity exists for lead to leach into water. This is what causes facilities with an "on again/off again" pattern of use such as schools and day care facilities to be at risk for elevated lead concentrations in drinking water.

The Environmental Protection Agency (EPA) recommends that action be taken at a specific tap/outlet when the lead concentration is over 20 parts per billion (ppb). Testing at each tap/outlet is the only sure way to find out if drinking water contains high levels of lead. Lead in drinking water is not a problem that takes place only in older buildings. Lead solder with more than 0.2% lead and plumbing with more than 8% lead was banned in 1987. Buildings did not have to be built with certified "lead free" fixtures until 1997.

New certified plumbing components can leach some lead. Water can absorb lead from lead pipes or solder in plumbing as well as from brass fixtures. Temperature, chlorine level, water chemistry (hardness and pH), velocity of flow, age and condition of pipes, and the presence of electrical wires grounded to water pipes affect the rate at which water absorbs lead. Never drink or cook with the first flush water that has been in plumbing for more than six hours. Hot water dissolves lead more quickly than cold, so don't allow the use of water from the hot water faucet for cooking or drinking.

Test for lead in your facility's drinking water taps/outlets. The only way to be certain that lead is not a problem in a school or day care facility is to test various drinking water taps/outlets for its presence. If elevated levels of lead are found, they can then be corrected.

The critical issue is that even though your public water supplier may send you water that meets all Federal and State public health standards for lead, you may still have too much lead in your drinking water because of the plumbing and water usage patterns in your facility. That is why testing water from your drinking water taps/outlets for lead is important. Before testing, it is necessary to assess the factors that can contribute to lead contamination and determine if your facility has a drinking water lead problem.

ASSESSMENT



DEVELOP A PROFILE OF YOUR FACILITY'S PLUMBING

Prioritize your sampling efforts. The answers to these questions will help you to determine whether it is likely that there is a lead contamination risk and, if so, whether it is localized or widespread.

- ◆ When was the facility built?
- ◆ Have new buildings or additions been added? If so, when were they added? If built since 1986, were lead-free plumbing and solder used?
- ◆ When were the most recent plumbing repairs made and where were they located?
- ◆ What are the potable water pipes in your facility made of and what is their location? Options include: lead, brass, copper, plastic, galvanized metal and other materials. What materials were used to solder the potable water pipes in your system? Are brass taps, fittings or valves used? Note the locations.
- ◆ How many of the following outlets provide water for consumption: Bubblers, ice makers, water coolers and kitchen taps. Note their location. Include taps that might be used for making coffee or preparing formula.
- ◆ What brands and models of water coolers (cooled drinking fountains) provide water in your facility and what is their location?
- ◆ Do faucets have accessible screens and have they been cleaned?
- ◆ Can you detect any signs of corrosion, such as leaks, rust-colored water or stains?
- ◆ Is any electrical equipment grounded to water pipes?
- ◆ Are there any records of previous water testing?

IF YOUR FACILITY OWNS OR OPERATES ITS OWN WATER SUPPLY, ASK THE SYSTEM OPERATOR:

- ◆ Is the supply in compliance with federal and state standards for lead?
- ◆ What were the results of the last sampling, and are there any problems?
- ◆ Is the water being treated to minimize corrosion?
- ◆ What other water conditions are being treated?

Some Facts to Help You Understand the Significance of Your Plumbing Profile:

- ◆ **When was the facility constructed?** Buildings up through the early 1900's, commonly used lead interior pipes. Plumbing before 1930 is most likely to contain lead. Between 1920 and 1950, galvanized pipes were used for plumbing. After 1930, copper generally replaced lead. Up until the late 1980s, lead solders were typically used to join copper pipes. The lead-free requirements of the 1986 Safe Drinking Water Act mean lead solder with more than 0.2% lead and plumbing with more than 8% lead were banned in 1987. Buildings did not have to be built with certified "lead-free" fixtures until 1997.
- ◆ **Are there new buildings and additions?** New buildings are unlikely to have lead pipes, but they are likely to have copper pipes with solder joints. Buildings built prior to 1986 are likely to have joints made of lead solder. Some brass fittings although they contain less than 8% lead in alloy may still contribute a significant amount of lead to drinking water.
- ◆ **When were plumbing repairs made?** Corrosion is a result of the chemical reaction between water and pipes. Known as galvanic reaction this can be vigorous in new piping until a protective layer is built up in the piping. After about 5 years, the reaction usually slows down and lead gets into the water as a result of water being corrosive. If water supplied to a facility is corrosive, lead can remain a problem regardless of the age of the plumbing.
- ◆ **What material is used in the service connector?** Lead piping was often used for service connectors that join buildings to public water supplies. Lead pipes are dull gray in color and may be easily scratched by a metal object. Lead pipes are a major source of lead contamination. Galvanized pipes are gray and usually fitted together with threaded joints. Copper pipes are red-brown in color. Corroded portions may show green deposits. Plastic pipes should meet NSF International Standards for drinking water.
- ◆ **Are brass taps, fittings or valves used?** Brass is composed of two metals, commonly copper and zinc. Brass fittings commonly used in drinking water outlets contain up to 8% lead. This is considered "lead-free" under the Safe Drinking Water Act. Contamination may still take place. The amount of lead that will leach from brass products with less than 8% lead is dependent upon the corrosiveness of the water and the processes employed in manufacturing the products.

Some Facts to Help You Understand the Significance of Your Plumbing Profile: (con't)

- ◆ **Type of outlets used for drinking water?** Components of the system, lead solders and lead in brass may all be sources of lead.
- ◆ **What are the brands and models of water coolers?** Water coolers may be a major source of lead contamination. Under the Lead Contamination Control Act of 1988, water coolers with lead-lined tanks are considered to be imminently hazardous consumer products, and manufacturers and importers are to repair, replace, or recall these coolers. Limits for solder, flux, and storage tanks interior surfaces in contact with drinking water may not contain more than 0.2% lead. Other parts of water coolers that may come in contact with drinking water are not to contain more than 8% lead. The law attaches criminal and civil penalties for the manufacture and sale of water coolers containing lead.
- ◆ **Do faucets have accessible screens and when were they cleaned?** Lead containing sediments that are trapped on screens can be a source of significant contamination. Sediments may need to be tested and screens should be cleaned frequently.
- ◆ **Are there signs of corrosion?** Corrosion may indicate high levels of lead, copper and iron in the water.
- ◆ **Is electrical equipment grounded to water pipes?** Electric current traveling through the ground wires will accelerate the corrosion of interior plumbing containing lead. **DO NOT** remove the wires from the pipes unless a qualified electrician installs an alternative grounding system. Improper grounding of electrical equipment may cause severe shock.
- ◆ **When was the water in your facility tested for contaminants?** Results of water quality testing can provide clues about the corrosiveness of the water. If your facility operates its own water supply, such tests can help you decide on effective treatment approaches.
- ◆ If your facility provides its own water supply, you should be aware of your legal requirements to control corrosion and minimize lead at the taps/outlets. If you have any questions regarding your legal responsibilities as a water supplier, call ADEQ's Water Quality Division at (602) 771-4644.

DETERMINE SAMPLING LOCATIONS

Based on your responses to the plumbing profile and your personal knowledge of your facility you must decide where to take samples and how to prioritize the sample locations. Taps/outlets that are used regularly by students and staff for drinking, cooking, making coffee or ice making are potential sources for drinking water. Consider the fact that actual usage may change over time. Technically, any tap/outlet for potable water is a potential source of drinking water and with limited funds you want to prioritize sampling sites based on potential use and risk.

BEFORE YOU SAMPLE

Know the building's source of water. Obtain a copy of the most current lead test results from your water system. A Water Quality Report is distributed by your water provider every year. Water characteristics and results can help you interpret your sampling results. You can also check to see if the water is optimized for corrosion control. The water provider for your system is a good source of information.

Check for Recalled Water Coolers. Certain water coolers were recalled by the Consumer Product Safety Commission in 1990 because they were manufactured with lead-lined tanks. Other coolers had other lead containing parts or lead solder. See *appendix A*.

Develop a written sampling plan. Clarify procedures and personnel to be involved in the sampling program. Identify taps/outlets to be tested for lead. Note cooler make and model number and any other identifying characteristics. See *appendix B*.

Be sure to communicate your plans. Inform maintenance staff, teachers, parents and students of your sampling plans.

Sampling Overview

The Arizona Department of Environmental Quality recommends a two-step sampling protocol for identifying lead contamination, especially in large buildings that might require many samples to be collected. First, screening samples are collected to identify the location of taps/outlets that are providing water with high levels of lead. Second, follow-up samples are taken at problem locations. The results of the initial and follow-up samples are then compared to determine the sources of contamination and appropriate corrective measures. Since your Sample Collection must be analyzed by a certified drinking water laboratory, it would be best to select your choice of laboratory before you start your sampling. The licensed laboratory can provide containers for the collection and also provide instructions. (Selection of the Laboratory is discussed later in this section of the manual).



STEP 1 - INITIAL SCREENING

Initial screening samples determine lead content at various points. Initial screening samples are taken to determine the lead content of water entering your facility and the lead content of water sitting in various taps/outlets within your facility. The goal of the initial screening is to identify problem taps/outlets or areas of high lead concentrations.

To determine the lead content of water entering your facility, contact your public water supplier. Test water that is representative of that at your service connector, which is the pipe that connects your building to the water meter, to determine what contribution the connector is making to lead concentration in your facility.

Individual taps/outlets are sampled from "morning, first-draw" water. This is the first discharge of water emitted from a tap/outlet after the tap/outlet has been sitting for a period of 8 hours or more. The longer water is in contact with plumbing containing lead, the more opportunity exists for the water to absorb the lead. This sample will reflect a "worst case scenario" for the tap/outlet. Make sure results are in parts per billion (ppb). See "*Parts per Billion*" in the glossary for methods to convert other types of results.

If lead is at or below 20 ppb from a tap/outlet, it is considered safe. The water may continue to be used for drinking water and should be retested in five years. If lead exceeds 20 ppb, implement twice daily flushing using the procedures described in the section of the document titled "Control Measures Recommended by ADEQ."

Test results more than five years old are generally not current enough for making informed decisions. This is why certain taps/outlets should be sampled at least every five years.

STEP 2 - FOLLOW-UP SCREENING

If the initial test results are greater than 20 ppb for a tap/outlet, follow-up testing is recommended. Follow-up samples involve the collection of water at a tap/outlet where the water has run for 30 seconds. As with the initial testing, follow-up samples are collected before the facility opens and before any water is used. This approach is designed to analyze the lead content of the water in the plumbing behind the wall and the tap/outlet. This is in contrast to the initial sample that measures the lead content of the water in the tap/outlet itself. A comparison is then performed to determine where the lead may be getting into the water - from the tap/outlet or from the plumbing behind the tap/outlet. Appropriate corrective measures can then be taken.

The total number of samples collected will depend upon the size of the facility, the number of taps/outlets used to supply drinking water and the expected extent of contamination. More taps/outlets with elevated levels will require more follow-up samples to pinpoint the contamination source. Generally, a larger number of samples will result in a better assessment of the source and extent of lead in the water.

SAMPLE COLLECTION

Sample collection must be analyzed by licensed laboratory. A certified drinking water laboratory must perform the analysis of samples. For a list of licensed laboratories contact Laboratory Licensure, Arizona Department of Health Services at (602) 364-0720. Make sure the laboratory you select thoroughly understands the protocol described in this section, and does not confuse it with the lead testing protocol used by public water systems. Public water system lead testing protocol is designed to assess a system-wide risk of lead contamination, and is not appropriate for the assessment of lead concentrations at defined taps/outlets.

Your selected laboratory may provide containers for the collection of the samples.

Follow the sampling instructions carefully. All water samples collected should be 250 milliliters (ml) in volume. Be sure that sample collection containers will accommodate this volume and that markings are appropriate. The laboratory you select may agree to do the sampling for you.

Sampling must be done according to consistent procedures. 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 collected.

Make sure that no water is withdrawn from the taps/outlets from which the samples are to be collected prior to the sampling. It is important that consistent procedures are used in collection of samples so that generalizations about test results can be made. Unless told otherwise, do not collect samples in the morning after a vacation, weekend or holiday. These results will likely be higher because of the extended contact time with the water. Such samples would not be representative of the normal use pattern. Assign an appropriate sample ID number to each sample collected. This number should reflect the type of tap/outlet and location. Record this number on the sample container and on your recordkeeping form. See *Appendix C on Page 23*.

RESPONSE ACTIONS

YOU WILL NEED TO TAKE ACTION IN RESPONSE TO FINDINGS

Short-term as well as permanent solutions must be found when lead risks are identified. Interim steps can be taken while you are waiting for test results or until permanent solutions can be put into place. There is no one method for determining which responses will be most effective. Decisions will need to be based on the age/condition of your plumbing, the nature of the water supply, the testing results, and the sources of lead contamination. Remedies are site-specific and are driven by the follow-up test results. It is crucial to determine the source/s of lead contamination prior to instituting solutions.

ADEQ RECOMMENDS THESE CONTROL MEASURES

- ◆ Clean debris from all accessible screens frequently. If you discovered sediment in faucet screens, have the sediment tested and continue to clean screens frequently.
- ◆ Use only cold water for food and beverage preparations in cafeterias and cooking classes. Hot water will dissolve lead more quickly than cold water and is therefore more likely to contain increased lead levels.
- ◆ Flush the piping system in your facility. Do not use first flush water that has been in contact with the facility plumbing for more than 6 hours. Flushing involves opening all suspect taps/outlets every morning before the facility opens and letting the water run for a period of time to clear water standing in the interior pipes and taps/outlets.
- ◆ Locate the tap/outlet furthest from the service line on each wing and floor; open the tap/outlet wide and let the water run for 10 minutes. For precise results, calculate the volume of the plumbing and flow rate - an exact determination would probably need to be made by a plumber or engineer.
- ◆ Open all valves at all drinking water fountains without refrigeration units and let the water run for 1 minute.
- ◆ Let the water run on refrigerated water fountains for 15 minutes. Because of the long time period required, routine flushing of these units may not be practical and it may be necessary to replace them with lead-free units.
- ◆ Open all kitchen taps/outlets (and any other taps/outlets used for drinking and/or cooking purposes) and let water run for 1 minute.
- ◆ You may also wish to consider providing bottled water. This can be an expensive alternative. If this should be your choice, ADEQ recommends that you require a written statement from the bottled water distributor guaranteeing that the bottled water meets FDA and Arizona standards.

LONG TERM REMEDIES

There are a number of long-term actions that might reduce or eliminate sources of lead contamination that originate in your facility's plumbing. The results of testing will give you the information to help determine which treatment options will be most appropriate for your circumstances.

Water that is soft or acidic can be treated to make it less corrosive. Corrosion control devices for individual buildings are commercially available. Carbon, sand, cartridge filters, and water softeners will not prevent corrosion.

Lead levels can be reduced at the tap/outlet. Reverse osmosis and distillation units are commercially available and can be effective at removing lead. These devices do make water corrosive and should be used only when placed at the tap/outlet. Called "point-of-use" (POU) devices, ADEQ highly recommends you obtain information about them before purchasing by writing or calling:

National Sanitation Foundation International (NSF)
789 Dixboro Road
P.O. Box 130140
Ann Arbor, MI 48113-0140
(800) 673-6275

The device should be approved as meeting NSF Standard 53, NSF Standard 58 or equivalent. It must be installed, operated, and maintained in accordance with manufacturer's recommended procedures.

Existing wires grounded to water pipes can possibly be removed by a qualified electrician and an alternative grounding system could be installed.

If the source of lead contamination is localized or limited to a few taps/outlets, replacing the taps/outlets might be the most practical solution. A tap/outlet may be replaced with a new one if the existing tap/outlet is suspected to be the contamination source. Metallic fixtures, even new ones may contain up to 8% lead and still be recognized as "lead-free".

Replace suspected sources of lead, including lead pipe, lead solder, brass plumbing components, and brass faucets.

While flushing individual or all taps/outlets may be a long term solution, it does involve a potential for wasting water, particularly of concern in Arizona. It is a quick and easy method, with nothing to install. It can be time-consuming for staff and it can be easy to forget that the water is flowing. This process would also require that someone be responsible for follow-up to ensure that procedures are properly followed and are effectively reducing lead levels.

Time-operated solenoid valves can be installed to automatically flush the main pipes. However, these solenoids are not practical for flushing water coolers. These would need to be flushed manually.

LONG TERM REMEDIES (CON'T)

Again, another alternative is to purchase bottled water.

If you choose a solution that requires work by a plumber on any part of the facility's plumbing system, make sure the plumber uses only "lead-free" solders and materials. The SDWA of 1986 requires only "lead-free" materials be used in new plumbing and plumbing repairs. Violations of the "lead-free" requirements should be reported to your city or town government's plumbing inspector or to ADEQ's Water Quality Division which is responsible for Arizona's drinking water program. The number to call is (602) 771-4617.

PUBLIC EDUCATION

A lead control program should contain a public education component. This section will discuss the mandatory public notice requirements for reporting lead test results under the Lead Contamination Control Act (LCCA) and discuss the importance of developing an overall communication strategy.

Mandatory Public Notice Requirements of the LCCA

Schools and day care facilities conducting a lead-in-drinking water sampling program must comply with the public availability requirements of the LCCA. There are two separate public availability requirements with which schools and day care facilities must comply:

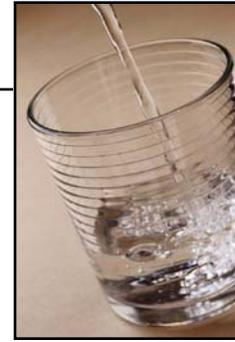
1. You must make available (in your administrative offices) a copy of the sampling results for "inspection by the public, including teachers, other personnel, and parents." ADEQ advocates that any facility conducting sampling for lead make public any test results. In addition, they advocate identifying activities that are being pursued to correct any lead problems found.
2. You must also notify relevant parent, teacher and employee organizations of the availability of your sampling program results.

Public Notification Methods

There are five basic public notification methods that can be applied to communicate lead-in-drinking-water issues and the meaning and significance of your sampling program results. Choose the method that best suits your situation. *Remember, you should not provide sampling program results to the public without providing a basis for interpreting and understanding the significance of those results.*

- 1. Press Release** - A press release in a local newspaper can inform a broad range of the local public about lead-in-drinking-water issues and the results of your testing program. It is important that a release inform readers of how to obtain the results and other information. It would be useful to provide a telephone number for an informed facility official.
- 2. Follow-up Letters** - Letters represent the most direct methods of communicating the lead-in-drinking-water issues to parents and members of your facility. The letters should be mailed directly to any existing address list.
- 3. Mailbox or Paycheck Stuffers** - Stuffers are a very direct method of communicating with personnel. Stuffers should contain the same information contained in letters or press releases.
- 4. Staff Newsletter** - A notice contained in a staff newsletter is another option for direct and effective communication with employees.
- 5. Presentations** - Presentations or briefings at facility related meetings can also be effective. Relevant events for schools would include meeting of parent-teacher organizations, faculty, and the school board.

COMPONENTS OF AN EFFECTIVE COMMUNICATION STRATEGY



Lead in drinking water may be an emotional and sensitive issue. The communication and outreach activities should not be viewed as stand-alone, but as a part of an overall communication program. The communication strategy should provide a means of addressing questions and providing up-to-date information about sampling and remediation efforts. Ideally, a spokesperson or task force should be available to interact with the public to ensure message consistency.

Issues that will need to be addressed as a part of the communication strategy should include: Participants, timing of delivery, contents of message, and methods and manner of communication.

Participants

Those with primary interests and involvement in control of lead in drinking water:

State and EPA Regions: The Arizona Department of Environmental Quality (ADEQ) and EPA Region IX with headquarters in San Francisco are responsible for ensuring that public water systems comply with National Primary Drinking Water Regulations for lead. States are responsible for assisting schools and day care facilities in implementing lead in drinking water control programs.

Drinking Water Community: Public water systems comprise the regulated drinking water community and they have responsibility for complying with National and State drinking water standards for lead. They ensure that the water they deliver is non-corrosive, contains regulated levels of lead, and will not result in significant levels of lead leaching from plumbing.

Local Community: The local community includes those who would be most affected by lead in drinking water risks. Members of the local community should be the primary target of any general communication activities.

Larger Community: The local and regional media can serve as a conduit for information reaching a larger local community. Your spokesperson should be prepared to respond to interview requests with accurate and consistent information.

Timing

The timing of communication activities can reduce complications and conflict if those potentially affected are notified in advance of important issues and events. At the very least, you should provide information at the following times: before the sampling program begins, in response to public interest, and after results of testing are obtained and when decisions on corrective actions are being made. This notification should take place within thirty days from receipt of test results from the laboratory.

Contents of the Message

Your message should contain the following: details about the nature of your lead control program, results of sampling and plans for correcting problems, information on public health effects and risks posed by lead in drinking water and the existence of lead in drinking water resources.

COMPONENTS OF AN EFFECTIVE COMMUNICATION STRATEGY (CON'T)

Methods of Communicating

The methods should be consistent with your communication strategy. Additional ideas may include: Create an information center in your facility, develop a task force and include members of your facility's community and encourage classroom activities that focus on drinking water quality.

Communication Tips

- ◆ Take the initiative in providing information to your community. When children and health risks are involved be concise, consistent and correct in the information you present.
- ◆ Be certain that the information you provide is accurate, comprehensive and true. Be a credible source of information.
- ◆ Ensure consistency of message by having one spokesperson.
- ◆ Anticipate types of questions and realize that members of various constituencies (e.g. teachers, employees, parents, and students) will have different concerns.
- ◆ Be positive, proactive and forthcoming when dealing with media. Work together in a cordial manner and your communication efforts will likely be less complex.
- ◆ Keep members of the faculty and other employees up-to-date on events and share information as the program develops.

SAMPLE PUBLIC NOTICE LETTER

(ADEQ recommends that you inform ADEQ's Communications Department of your findings and intention to distribute a public notice. Contact: Cortland Coleman, Director of Communications, ADEQ, at (602) 771-2215).

Dear members of any town School:

The US EPA has determined that lead in drinking water is a health concern at certain levels of exposure. The groups most vulnerable to lead include young children and pregnant women. Ingestion of lead in pregnant women can seriously harm a child before it is born. Lead in young children, especially those under six years of age, can result in serious long term health problems.

As a result of these health effects, the Arizona Department of Environmental Quality (ADEQ) has applied stringent regulations to public water systems. However, since lead is generally contributed to drinking water via plumbing in homes and businesses, ADEQ has advocated testing of water in private buildings. ADEQ recommends that action be taken if levels of lead exceed 20 parts per billion (ppb) at any tap/outlet.

In October 1988, the U.S. Congress passed the Lead Contamination Control Act (LCCA) which specifically addressed the problem of lead in school and day care facility drinking water. Following instructions given in an ADEQ guidance document especially designed for schools and day care facilities we have completed a plumbing profile for each building in the any town school/day care facility system. Through this effort, we have identified and tested those drinking water taps/outlets most likely to have high levels of lead. Of the ___ samples taken, all but ___ tested well below the ADEQ's recommended action level of 20 ppb.

The contaminated tap/outlet was a drinking ___ located at _____. After follow-up testing was conducted it was determined that ___ was the source of the lead contamination. The tap/outlet was replaced with a "lead-free" tap/outlet and retested. Follow-up test results were well below the ADEQ's recommended 20 ppb action level.

A copy of test results is available in our central office for inspection by the general public, including teachers, school personnel and parents and can be viewed between the hours of 7:00 a.m and 4:00 p.m.

For more information about water quality in our schools and day care facilities, contact Joe Doe at any town school/day care, (000) 000-0000. For information about water quality in your home or for questions about testing, contact Jane Doe at any town water, (000) 000-0000.

Sincerely,

Superintendent of Any Town School/Day Care

LEGAL BACKGROUND AND REQUIREMENTS

The following federal laws currently pertain to lead in school and day care facility drinking water:

The Lead Contamination Control Act (LCCA) of 1988

This law applies to all schools and day care facilities, whether they purchase water from a community supplier or they supply their own water (i.e. well). The intent of the LCAA is to identify and reduce lead in drinking water in schools and day care facilities. It relies on voluntary compliance by individual schools, school districts, and day care facilities. The US EPA developed guidelines to assist schools and day care facilities in reducing lead in drinking water. The document, "Lead in Drinking Water in Schools and Non-Residential Buildings" is available on line at: www.epa.gov/safe-water/consumer/lead/schools.html. In this document EPA recommends a lead limit of 20 parts per billion (ppb) for school and day care facility drinking water, based on a 250 ml first draw sample.

The Safe Drinking Water Act (SDWA), Lead and Copper Rule

This law applies to schools and day care facilities that provide their own water supply and to water systems to which schools and day care facilities are customers. Compliance with the Lead and Copper Rule is mandatory for those schools or facilities that supply their own water. Under the Lead and Copper Rule, no more than ten percent (10%) of the samples from a school's or day care facility's drinking water taps/outlets may exceed the lead "action level" of 15 ppb. The "action level" is the level at which action must be taken to protect public health. If the action level is exceeded, the school or day care facility is legally required to take corrective action. A one liter (1000ml) first draw, cold water sample is used for monitoring under the Lead and Copper Rule. Please note schools and day care facilities that provide their own water are affected by both the LCCA and the Lead and Copper Rule.

SOURCES OF INFORMATION ABOUT LEAD IN DRINKING WATER:

"Children and Safe Drinking Water Standards"

www.epa.gov/safewater/kids/health.html

"Lead in Drinking Water"

www.epa.gov/safewater/lead/safedecisiontree.html

"Schools and Day Care Centers"

www.epa.gov/safewater/lead/schoolsanddcs.html

"Lead Contamination Control Act"

www.epa.gov/safewater/lead/pdfs/cpcalccampamphlet1998.pdf

"Sampling for Lead in Drinking Water and Nursery Schools and Day Care Facilities"

www.epa.gov/safewater/lcmr/nursery.pdf

"Lead in Drinking Water in Schools and Non-Residential Buildings"

www.epa.gov/safewater/consumer/leadinschools.html

"Testing Schools and Day Care Centers for Lead in Drinking Water"

www.epa.gov/safewater/lead/testing.html#fix

"Revised Guidance Manual for Selecting Lead and Copper Control Strategies"

www.epa.gov/safewater/lcmr/leadcopper_pegs.pdf

"Are you Providing Safe Drinking Water at Your School?"

www.epa.gov/ne/eco/drinkwater/pdfs/Drinking-Water-Booklet.pdf

EPA Safe Drinking Water Hotline

1(800) 426-4791 or www.sdhotline@bah.com

National Lead Information Center (NLIC)

1(800) 424-LEAD (5323)

Access other EPA information about lead on line:

www.epa.gov/lead or www.amwa.net/lead

EPA REGION 9 LEAD PROGRAM CONTACTS

Mary T. Aycock
Regional Lead Coordinator
(415) 947-4169
aycock.mary@epa.gov

Nancy Oien
Section 1018 Tips & Complaints
(415) 972-3780
oien.nancy@epa.gov

Marjorie Xavier
Outreach
(415) 947-4164
xavier.marjorie@epa.gov

ADEQ LEAD PROGRAM CONTACTS

ADEQ Safe Drinking Water Program
(602) 771-4644

Drinking Water Program
Water Quality Division
Arizona Department of Environmental Quality
1110 W. Washington St
Phoenix, AZ 85007
(602) 771-4617
www.azdeq.gov

Cortland Coleman
Communications Director
Arizona Department of Environmental Quality
(602) 771-2215
coleman.cortland@azdeq.gov

OTHER CONTACTS

Lead Poisoning Prevention Program
Arizona Department of Health Services
150 N. 18th Avenue, Suite 430
Phoenix, AZ 85007
(602) 364-3118 or (800) 357-6412
www.hs.state.az.us - click under Environmental Health

GLOSSARY

First Draw Sample

First water drawn from a tap/outlet after water has been allowed to stand in the plumbing system for at least eight hours or overnight. Usually collected in the morning before the line can be used for any purpose.

Flush

Running the water at a tap/outlet or combination of taps/outlets to clear standing water from the system. Flushing is used to reduce the amount of lead present in drinking water. See the section of this document titled "Control Measures Recommended by ADEQ" for complete directions.

Lead Free

The Safe Drinking Water Act (SDWA) defines "lead free" as:

- ◆ Solders and flux - does not contain more than 0.2 percent lead.
- ◆ Pipes, pipe fittings, and well pumps - does not contain more than 8.0 percent lead.

Since 1988, only lead free pipe, solder, or flux may be used in the installation or repair of: public water systems or any plumbing in a residential or non-residential facility providing water for human consumption, which is connected to a public water system.

Note that "lead-free" taps/outlets may still contain up to 8% lead. The definition of "lead-free" is related to the amount of lead in the product and is not based on the amount of lead that may be available to leach into the water.

parts per billion (ppb)

A unit of measurement equal to one microgram per liter. This measurement is commonly used to describe concentration in drinking water.

1 part per billion (ppb) = 1 microgram per liter ($\mu\text{g/l}$)

1000 parts per billion = 1 part per million (ppm) = 1 milligram per liter (mg/l)

Tap/Outlet

Point of access for people to obtain water for drinking or cooking. A tap/outlet can be a fixture, faucet, drinking fountain, or water cooler.

APPENDIX A

COOLER INFORMATION

The Lead Contamination Control Act (LCCA) an amendment to the Safe Drinking Water Act was signed into law on October 31, 1988. The potential of water supply coolers to supply lead to drinking water in schools and day care facilities was a principle focus of the legislation. The LCCA mandated the Consumer Product Safety Commission (CPSC) to order the repair, replacement or recall and refund of drinking water coolers with lead-lined water tanks. In addition, the LCCA called for a ban on the manufacture or sale in interstate commerce of drinking water coolers that are not lead-free. Civil and criminal penalties were established for violations of this ban.



A consent agreement calls on cooler manufacturer Halsey-Taylor to provide a replacement or refund program that addresses all the coolers listed as well as "all tank-type models of drinking water coolers manufactured by Halsey-Taylor". Halsey-Taylor agreed to notify the public of replacement and refund program for all tank type models. Contact:

Halsey-Taylor
2222 Camden Court
Oak Brook, IL 60523
(630) 574-3503

WATER COOLERS WITH OTHER LEAD COMPONENTS

EBCO Manufacturing

All pressure bubbler water coolers with shipping dates from 1962 through 1977 have a bubbler valve containing lead. The units contain a single, 50-50 tin-lead solder joint on the bubbler valve. Model numbers for the coolers in this category are not available.

The following models of pressure bubbler coolers produced from 1978 through 1981 contain one 50-50 tin-lead solder joint each:

CP3	DP15W	DPM8	7P	13P	DPM8H	DP15M	DP3R
DP8A	DP16M	DP5S	C10E	PX-10	DP7S	DP13SM	DP7M
CP5	WTC10	CP5M	CP10	13PL	DP7MH	DP7WD	DP13M-60
EP5F	DP5F	DP14M	DP20	SP12N	CP10-50	DP15MW	DP3R
DP14S	DP5M	EP10F	DP13A	DP13M	DP20-50	DP13A-50	DP14A-0/60
DP10F	CP3H	DP13S	CP3-50	DP7SM	DP8AH	DP10X	DP3RH
CP3M	DP7WM						

Halsey-Taylor

Lead solder was used in these models of water coolers manufactured between 1978 and the last week of 1987:

WMA-1	SCWT/SCWT-A	SWA-1	DC/DHC-1
S3/5/10D	BFC-4F/7F/4FS/7FS	S300/500/100D	

APPENDIX A (CON'T)

Halsey-Taylor (con't)

The following coolers manufactured for Haws Drinking Faucet Company (Haws) by Halsey-Taylor from November 1984 through December 18, 1987 are not lead-free because they contain 2 tin-lead solder joints. The model numbers:

HC8WT	HC14F	HC6W	HWC7D	HC8WTH
HC14FH	HC8W	HC2F	HC14WT	HC14FL
HC14W	HC2FH	HC14WTH	HC8FL	HC4F
HC5F	HC14WL	HCBF7D	HC4FH	HC10F
HC16WT	HCBF7HO	HC8FH	HC4W	HC8FH
HC4W	HWC7			

Halsey-Taylor Water Coolers with Lead-Lined Tanks

The following six models have one or more units in the model series with lead-lined tanks:

WM8A	WT8A	GC10ACR	GC10A	CG5A	RWM13A
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The following models and serial numbers contain lead-lined tanks:

WM14A Serial No. 843034	WM14A Serial No. 843006
WT11a Serial No. 222650	WT21A Serial No. 64309550
WT21A Serial No. 64309542	LL14A Serial No. 64346908

APPENDIX B

Development of Sampling Plan

1. Identify potential problem areas in your facility by first completing the plumbing profile.
2. Develop sampling plan.
 - a. Determine who will be in charge of sampling program. It is important to designate a leader to take responsibility for the sampling program and to ensure that it is conducted properly.
 - b. Determine who will collect samples.
 - c. Determine who will analyze samples. Ensure that laboratory is certified for lead testing by Arizona Department of Health Services. Also make sure that the laboratory understands the testing protocol required and ensure they do not confuse this with the lead testing required by public water suppliers. The testing protocol to be used is intended to facilitate identification of sources of lead causing contamination problems in single outlets. The testing procedure used by public water suppliers is designed to identify system-wide problems. In your selection process, ask the laboratory if it will collect the samples for you or will the laboratory provide training and sample containers to you?
 - d. Determine who will maintain records.

APPENDIX C

SAMPLE RECORDKEEPING FORM

Name of Facility: _____

Address: _____

Contact Name: _____

Phone #: (_____) _____

RECORD OF SAMPLING:				
Name of Sample Collector:				
Sample ID#				
Circle Sample type:				
Service Connection	Initial	1st Follow-up	2nd Follow-up	
Length of Flush:				
Type of Tap/Outlet:				
MFG/Model:				
Serial#:				
Date of Installation:				
Location:				
Date of Collection:				
Time of Collection:			AM / PM	
Name of Laboratory Used:				
Lead concentration (ppb):				
Notes:				

APPENDIX D

Maintenance Checklist

Name of Facility: _____

Address: _____

Contact Name: _____

Phone #: (_____) _____

ACTIVITY TO BE EVALUATED	Yes	NO	Action
Plumbing Related to Drinking Water Fixtures			
Plumbing survey has been conducted?			
Alterations made to existing plumbing system?			
Certified components/materials used?			
Licensed plumber for the installation/modifications/alterations?			
Drinking/cooking outlets flushed at the start of each school day?			
Drinking Fountains			
Drinking fountains checked for known lead-containing models?			
Drinking fountains on the list of known lead-containing models removed?			
Collection/testing of water samples for lead has been implemented?			
Remedial actions implemented for fountains exceeding the action limit?			
Fountains exceeding the action limit after remedial actions removed?			
Cafeteria (if applicable) and Cooking Classes (if applicable)			
Faucets included in a regularly scheduled sampling/testing program?			
Only cold water is used for preparing foods and beverages?			
Bottled Water (if used) Water (if used)			
Bottled water is a substitute for devices taken out of service?			
Bottled water supplier approved by Arizona Department of Health?			
Bottled water stored in a safe, secure area?			
Dispensers cleaned regularly?			
Record Keeping			
Drinking Water Testing/Quality Records in a centralized and clearly labeled file?			

Evaluation of Results: (check all that apply)

- School in compliance
- Treatment units planned (Start Date: ___/___/___)
- Additional testing needed (Start Date: ___/___/___)
- Bottled water proposed (Start Date: ___/___/___)
- Flushing proposed (Start Date: ___/___/___)
- Educational notice for parents and school proposed (Start Date: ___/___/___)
- Other actions planned _____ (Start Date: ___/___/___)



ADEQ's Children's Environmental Health Project

1110 West Washington Street
Phoenix, Arizona 85007
ADEQ Main Information Desk:
(602) 771-2202
Toll Free in AZ: (800) 234-5677
Website: <http://azdeq.gov>