# PLUMBING FORMS Q & A

OKLAHOMA Environmental Quality

This document may provide some clarity to what your answers may mean in regards to the questions asked in the Plumbing Profile Information Form. This can help to determine whether lead is likely to be a problem in your facility and will enable you to prioritize you sampling plan.

**PLUMBING PROFILE INFORMATION QUESTIONS AND ANSWERS**

1a. What year was the original building constructed?

1b. Have any buildings or additions been added to the original facility? ☐ Yes ☐ No

Older Buildings – Through the early 1900s, lead pipes were commonly used for interior plumbing in certain parts of the country in public buildings and private homes. Plumbing installed before 1930 is more likely to contain lead than newer pipes. Between 1920 and 1950, galvanized pipes were also used for plumbing. After 1930, copper generally replaced lead as the most commonly used material for water pipes. Up until the mid- to late-1980s (until the lead-free requirements of the 1986 Safe Drinking Water Act Amendments took effect), lead solder was typically used to join these copper pipes. The efforts of your public water supplier over the years to minimize the corrosiveness of the water may have resulted in mineral deposits forming a coating on the inside of the water pipes (passivation). This coating insulates the water from the plumbing and results in decreased lead levels in water. If the coating does not exist or is disturbed, the water is in direct contact with any lead in the plumbing system.

Newer Buildings – New buildings are not likely to have lead pipes in their plumbing systems, but they are very likely to have copper pipes with solder joints. Buildings constructed prior to the late 1980s, before the lead-free requirements of the 1986 Safe Drinking Water Act Amendments, may have joints made of lead solder. Buildings constructed after this period should have joints made of lead-free solders. Even if "lead-free" materials were used in new construction and/or plumbing repairs, lead leaching may occur.

2. If the building was constructed or repaired after 1986, was lead-free plumbing and solder utilized? ☐ Yes ☐ No ☐ Unknown

If yes, what type of solder was used? _____

The 1986 Amendments to the Safe Drinking Water Act banned plumbing components that contained elevated levels of lead. Lead-free solder and flux (not more than 0.2% lead) and pipe, pipe fittings, and fixtures (not more than 8% lead) must now be used. The leaching potential of lead-free (i.e., tin- antimony) solder is much less than lead solder. The leaching potential of lead-free pipe, pipe fittings, and fixtures is also less, but leaching is still possible. If lead-free materials were not used in new construction and/or plumbing repairs, elevated lead levels can be produced. If the film resulting from passivation does not exist or has not yet adequately formed, any lead that is present is in direct contact with the water. In some areas of the country, it is possible that high-lead materials were used until 1988 or perhaps even later. Your local plumbing

code authority or building inspector may be able to provide guidance regarding when high-lead materials were last used on a regular basis in your area.

3. Where are the most recent plumbing repairs and replacements?

Corrosion occurs (1) as a reaction between the water and the pipes and (2) as a reaction between the copper and solder (metal-to-metal). This latter reaction is known as galvanic corrosion, which can be vigorous in new piping. If lead solders were used in the piping or if brass faucets, valves, and fittings containing alloys of lead were installed (see response to Walk Through Question 5 below for further discussion of brass), lead levels in the water may be high. After about 5 years, however, this type of reaction (galvanic corrosion) slows down and lead gets into water mainly as a result of water being corrosive. If the water is non-corrosive, passivation is likely to have occurred and to have reduced opportunities for lead to get into the water system. For these reasons, if the building (or an addition, new plumbing, or repair) is less than 5 years old and lead solder or other materials (e.g., brass faucets containing lead alloys) were used, you may have elevated lead levels. If water supplied to the building is corrosive, lead can remain a problem regardless of the plumbing's age.

4. With what materials are the service connection made of (the pipe that carries water to the facility from the public water system's main line) and where is it located (this is a point of entry location)?

Lead piping was often used for the service connections that join buildings to public water systems. The service connection is the pipe that carries drinking water from a public water main to a building. Some localities actually required the use of lead service connections up until the lead-free requirements of the 1986 Safe Drinking Water Act Amendments took effect. Although a protective layering of minerals may have formed on these pipes, vibrations can cause flaking of any protective build-up and, allowing lead contamination to occur.

5. Is there a point of entry or point of use treatment in use? ☐ Yes ☐ No

Treatment units could be, but are not limited to, ion exchange units, filter cartridge, reserve osmosis, etc.

6. Are there tanks in your plumbing system (pressure tanks, gravity storage tanks)?

☐ Yes ☐ No

Some older tanks may contain coatings that are high in lead content. Tanks may accumulate sediment that could be flushed back into the plumbing system under certain circumstances. You may wish to contact the supplier or manufacturer to obtain information about coatings. You may also wish to hire a plumber or tank service contractor to inspect your tanks, especially gravity storage tanks that are located outside of the building.

7. Does the facility have a filter maintenance and operation program? ☐ Yes ☐ No

# PLUMBING FORMS Q & A

OKLAHOMA Environmental Quality

A program for the maintenance and the upkeep of filters on drinking water outlets is necessary to ensure the effectiveness of the filters. Most filters recommend replacement after six months. If the filters need replacement every six months, the program will include a procedure for ensuring that every six month old filter is replaced. An individual should be responsible for ensuring that this filter maintenance program is followed.

If the facility would like to add a filter to a water outlet, what is the process? Does a request form have to be completed and submitted to the individual in charge of maintenance? Do all filters need to be added at a certain time of year to follow the maintenance program?

8a. Have accessible screens or aerators on the outlets that provide drinking water been cleaned? ☐ Yes ☐ No

8b. Does the facility have a screen or aerator maintenance program? ☐ Yes ☐ No

Lead-containing sediments that are trapped on screens can be a significant source of lead contamination. Sediments should be tested for the presence of lead, and your facility should create a routine maintenance program to clean the screens frequently. If sediment has been a reoccurring problem regular cleaning of the screens and additional investigating into why the debris is accumulating is appropriate. However, the manufacturer or water service provider should be contacted to obtain instructions.

9. Have there been any complaints about bad (metallic) taste? ☐ Yes ☐ No

Although you cannot see, taste, or smell lead dissolved in water, the presence of a metallic taste or rusty appearance may indicate corrosion and possible lead contamination.

10a. Review records and consult with the public water supplier to determine whether any water samples have been taken in the buildings for contaminants:

Name of contaminant(s): _____

Concentration(s) found: _____

pH Level: _____

10b. Is testing done regularly at the building? ☐ Yes ☐ No

Lead testing may have previously been done voluntarily under the Lead Contamination Control Act. Results of analyses of general water quality, such as measures of pH, calcium hardness, and carbonate alkalinity, can provide important clues about the corrosiveness of the water. Generally, the higher the values of these parameters, the less likely it is that your water is corrosive. If you have no data from your facility, your public water system should at least be able to provide information about the general water quality.

# PLUMBING FORMS Q & A

OKLAHOMA Environmental Quality

Additional Information

1. Are blueprints of the building available? ☐ Yes ☐ No
2. Are there known plumbing dead ends, low use areas, existing leaks or other problem areas? ☐ Yes ☐ No
3. Are renovations planned for any of the plumbing system? ☐ Yes ☐ No

You should incorporate this information into decisions regarding sample locations and sampling protocol. You may wish to note the direction of water flow and the location of fixtures, valves, tanks, areas of sediment accumulation, areas of corrosion, etc., on a sketch or blueprint of the plumbing.

---

**PLUMBING WALK THROUGH QUESTIONS AND ANSWERS**

1. Confirm the material of service line visually: _____

See PLUMBING PROFILE INFORMATION QUESTIONS AND ANSWERS #4.

2. Confirm the presence of point of entry or point of use treatment ☐ Yes ☐ No

See PLUMBING PROFILE INFORMATION QUESTIONS AND ANSWERS #5.

3a. What are the potable water pipes made of in your facility

☐ Lead ☐ Plastic ☐ Galvanized Metal ☐ Cast Iron

☐ Copper ☐ Other ☐ Unknown

3b. Note the water flow through the building; which areas receive water first and areas that receive water last.

Survey your building for exposed pipes, preferably accompanied by an experienced plumber who should be able to readily identify the composition of pipes on site. Most buildings have a combination of different plumbing materials:

· Lead pipes are dull gray in color and may be easily scratched by an object such as a knife or key. Lead pipes are a major source of lead contamination in drinking water.

· Galvanized metal pipes are gray or silver-gray in color and are usually fitted together with threaded joints. In some instances, compounds containing lead have been used to seal the threads joining the pipes. Debris from this material, which has fallen inside the pipes, may be a source of contamination.

· Copper pipes are red-brown in color. Corroded portions may show green deposits. Copper pipe joints were typically joined together with lead solders until the lead-free requirements of the 1986 Safe Drinking Water Act Amendments took effect.

· Plastic pipes, especially those manufactured abroad, may contain lead. If plastic pipes are used, be sure they meet NSF International standards. (Note: NSF International is an independent, third-party testing organization. Product listings can be obtained by visiting their Web site at http://www.nsf.org/ business/search_listings/index/asp.)

4. Are electrical wires grounded to water pipes? ☐ Yes ☐ No

If electrical equipment, such as telephones, has been installed using water pipes as a ground, the electric current traveling through the ground wire will accelerate the corrosion of any interior plumbing containing lead. The practice should be avoided, if possible. However, if existing wires are already grounded to water pipes, the wires should not be removed from the pipes unless a qualified electrician installs an alternative grounding system. Check with your local building inspector on this matter. Your state or local building code may require grounding of the wires to the water pipes. Improper grounding of electrical equipment may cause severe shock.

5. Are brass fillings, faucets, or valves used in your drinking water system? Note that most faucets are brass on the inside. ☐ Yes ☐ No

Brass fittings, faucets, and valves are golden yellow in color, similar to copper in appearance, or are plated with chrome. Brass is composed primarily of two metals, copper and zinc. Most brasses contain lead ranging from 2 percent to 8 percent. That lead can contaminate the water contact surface when it is smeared on the machined surfaces during production. After 1996, brass fittings installed in drinking water outlets such as faucets and water coolers must meet NSF standards for lead content. While this percentage is considered lead-free under the 1986 Safe Drinking Water Act Amendments, some contamination problems still may occur. Older brass faucets may contain higher percentages of lead and lead solder in their interior construction and pose contamination problems. Note that your state or local government may have imposed this standard prior to 1988. The degree to which lead will leach from brass products containing alloys with less than 8 percent lead is dependent upon the corrosiveness of the water and the manufacturing process used to develop the product. A study revealed that fabricated faucets tend to contribute less lead to the water than faucets manufactured by the permanent mold process, regardless of the amount of lead in the alloy. In response to a requirement of the 1996 SDWA, EPA worked with the plumbing industry and NSF International to develop a voluntary industry standard that is designed to minimize the amounts of lead being leached from these products. This standard is NSF/ANSI Standard 61, Section 9. Since 1998, all plumbing fixtures for use as drinking water supply must meet this standard. You should require NSF/ ANSI 61 certification on all drinking water system products purchased. Include a copy of the NSF/ ANSI 61 certificate as a requirement on your purchase orders. The distributor or manufacturer can provide you with a list of certified products. You should

require NSF/ANSI 61 certification on all drinking water system products used in new construction and inform your architects and revise your building specifications.

6. Locate and note all drinking water outlets (i.e. water coolers, fountains, bubblers, ice machines, kitchen/food prep sinks, etc.) in the facility in the Water Outlet Inventory Form.

In addition to lead components in the plumbing system, lead solders or lead in the brass fittings and valves used in some taps, bubblers, and refrigerated water coolers may be sources of lead. It is important to identify the locations of all such drinking water outlets. Faucets in restrooms should not be used to obtain water for drinking. Although they may be adequate for washing hands, they may not be appropriate for drinking purposes. You may consider posting "do not drink" signs.

7. Have the brands and models of the water coolers in the facility been compared to the list of recalled water coolers in the Toolkit? ☐ Yes ☐ No

Water coolers may be a major source of lead contamination. The Federal Consumer Product Safety Commission negotiated an agreement with Halsey Taylor through a consent order agreement published in June 1990 to provide a replacement or refund program that addresses all the water coolers listed by EPA as having lead-lined tanks. Halsey Taylor was the only company identified by EPA as manufacturing some water coolers with lead-lined tanks. Additionally, some coolers manufactured by EBCO had a bubbler valve and one soldered joint that contained lead.

See Attachment H.i of this document for a summary of EPA's list of water coolers found to contain lead. Use the list to help prioritize your sampling. If your water cooler is listed as having a lead-lined tank, you should not use the water for drinking, and you should remove the cooler immediately as these coolers pose the highest risk of contamination.

8. Note any signs of corrosion such as frequent leaks, rust-colored water, or stained fixtures, dishes, or laundry in the Water Outlet Inventory Form. Add location description below.

Frequent leaks, rust-colored water, and stains on fixtures, dishes, and laundry are signs of corrosive water. Blue-green deposits on pipes and sinks indicate copper corrosion; brown stains result from the corrosion of iron. Where such signs occur, high levels of lead, copper, and iron may be present in the water. Lead can accumulate with iron, which can form sediments that are hard to remove.

9. Are there any outlets that are not operational and therefore out of service permanently or temporarily? ☐ Yes ☐ No

Permanently out of service water outlets are outlets that are no longer being used and the facility plans to decommission in the future. Temporarily out of service water outlets are outlets that require repair or replacement and will be put back in service once they are operational.