



## Division of Drinking and Ground Waters

### Guidelines for Mapping Lead Plumbing and Fixtures for Individual Buildings

Division: DDAGW  
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#### I. PURPOSE:

The purpose of this document is to provide guidance on mapping lead containing plumbing, solder and fixtures in distribution systems of individual buildings.

#### II. BACKGROUND:

In June 2016, HB 512 was passed to enact section 6109.121 of the Ohio Revised Code (ORC) to establish requirements governing lead and copper testing for community and nontransient noncommunity public water systems and to revise law governing lead contamination from plumbing and fixtures. The law requires community water systems to identify and map areas of their distribution systems that are known or likely known to contain lead service lines. These systems are also required to identify and provide a description of the characteristics of buildings served by the system that may contain lead solder, fixtures or pipes. **Single building community water systems and nontransient noncommunity water systems are required to map areas of the system that have solder, fixtures and pipes containing lead.**

#### III. APPLICABLE REFERENCES:

1. U.S. EPA Lead and Copper Rule Monitoring and Reporting Guidance for Public Water Systems, EPA 816-R-10-004, March 2010, <https://www.epa.gov/nscep>.
2. U.S. EPA Safe Drinking Water Act (SDWA), <https://www.epa.gov/sdwa>.
3. Ohio House Bill 512 <https://www.legislature.ohio.gov>.
4. Ohio EPA District Offices <http://epa.ohio.gov/districts.aspx>.
5. Examples of Communities with Online Lead Service Line Maps
  - a. District of Columbia Water and Sewer Authority <https://dcwater.com/servicelines>.
  - b. Boston Water and Sewer Commission [http://www.bwsc.org/community/lead/leadmaps.asp#TOP\\_PAGE](http://www.bwsc.org/community/lead/leadmaps.asp#TOP_PAGE).

#### IV. LEAD MAPPING IN DISTRIBUTION SYSTEMS FOR BUILDINGS WITH LEAD PIPING, SOLDER OR FIXTURES – INDIVIDUAL BUILDINGS:

In 1986, the SDWA was amended to ban the use of lead solders which contain more than 0.2% lead. The lead ban provisions of the act became effective in Ohio Plumbing Code on March 30, 1998. The amendments also required the use of lead-free flux, pipes and fittings in new installations and repairs of public water systems, or any plumbing within a residential or nonresidential facility which provides water for human consumption. Lead-free was defined at the time as having no more than 8.0% lead (note this 8.0% was lowered to 0.25% in 2014).

In 1996, the SDWA was further amended to state the following is unlawful:

1. For any person to introduce into commerce any pipe, pipe fitting, plumbing fitting or plumbing fixture, that is not lead free, except for a pipe that is used in manufacturing or industrial processing; or
2. Any person engaged in the business of selling plumbing supplies; except manufacturers, to sell solder or flux that is not lead free; or
3. Any person to introduce into commerce any solder or flux that is not lead free unless the solder or flux bears a prominent label stating that it is illegal to use the solder or flux in the installation or repair of any plumbing providing water for human consumption.

In 2011, SDWA Section 1417 was amended for the prohibition on use and introduction into commerce of lead pipes, solder and flux. These new requirements became effective on January 1, 2014. The amendments specifically modified the applicability of the prohibitions by creating exemptions for certain non-potable applications, changed the definition of “lead-free” by reducing lead content from 8% to a weighted average of not more than 0.25% in the wetted surface material (primarily affects brass/bronze), eliminated the provision that required certain products to comply with “voluntary” standards for lead leaching, and established a statutory requirement for calculating lead content.

The exemptions to the SDWA Section 1417 are pipes, pipe fittings, plumbing fittings or fixtures, including backflow preventers, which are used exclusively for nonpotable services, such as manufacturing, industrial processing, irrigation, outdoor watering, or any other uses where the water is not anticipated to be used for human consumption. The exemption also applies to toilets, bidets, urinals, fill valves, flushometer valves, tub fillers, shower valves, service saddles, or water distribution main gate valves that are 2 inches in diameter or larger. In addition to the SDWA, the Community Fire Safety Act of 2013 exempted fire hydrants from this requirement.

As a result of these amendments, buildings constructed after 2014 are the least likely to have plumbing containing lead materials, so these consumers are at the lowest risk of exposure to lead from drinking water.

Because it is practically impossible to determine the lead content of an installed fixture, fitting or pipe, it should be assumed that the manufacture or installation date is the primary indicator of the lead content. Therefore, the characteristics of buildings and piping solder or fixtures would be **buildings built prior to 1998 or that use plumbing material or solder manufactured before 1998 may have materials with greater than 8% lead and are at a higher risk of contributing lead to the drinking water than materials manufactured after 1998. In addition, buildings built and plumbing materials manufactured after 2014 were required to have less than 0.25% lead by weight and have the lowest risk for contributing lead to the drinking water. It should be noted however that, although prohibited, some use of leaded solder or leaded components may have occurred after the prohibitions became effective.**

## V. MAPPING REQUIREMENTS AND RECOMMENDATIONS

Once identified, areas of the system known or are likely to have lead service lines, solder, fixtures or pipes containing lead must be plotted on a map of the entire distribution system which may be plumbing within a building. If the system has more than one building, service lines to all buildings must also be mapped (see the mapping requirements in the document, *Guidelines for Lead Mapping in Distribution Systems*). If a nontransient noncommunity water system serves buildings built prior to the 1986 lead ban (effective in Ohio Plumbing Code on March 30, 1998), the system should include, at minimum, a statement on what plumbing materials are part of the water system prior to 1998.

The different areas of the system on the map must be distinguished by different colors or other obvious mapping tools. An electronic copy of the map using mapping software, a map in a PDF or another generally used electronic file type is the preferred product, but hard copy colored maps are acceptable. The maps must be capable of being copied in color for distribution to the required parties and consumers upon request. (Examples of mapping software products are identified in section III.5 of this guidance.)

The maps must be at an appropriate scale and identify major streets, landmarks, or other methods of orientation so that the reader of the map could easily determine the orientation and location of the building covered by the map. Each floor of the building should be recorded on a separate page and identify each water service entrance point to the building.

If known, the map could include dates on when buildings were constructed with a key citing regulatory dates for reduced lead (e.g., before 1986 when there was no limit on lead or 1986 – 2014 when lead solder was banned and there was lower content of lead in brass). Lastly, systems should use, when available, engineered drawings or isometric schematics for the water distribution system if they meet the minimum map submittal criteria. In particular, hospitals may use isometric schematics or survey procedures per 42 CFR 482.41(c), schools may use their safety plan per OAC 3301-5-01, End Stage Renal Disease facilities per OAC 3701-83-23.1, or long term care facilities may use their standardized fire safety map as a base in the absence of a schematic or isometric drawing.

It is recommended systems map, at a minimum, the following building characteristic examples.

- Building name, address and telephone number.
- Exterior building sites using alpha phonetic identification (Alpha, Bravo, Charlie, Delta).
- A bar scale and compass directions (at minimum, note North).
- Each floor recorded on a separate page.
- Water service entrance points into the building marked with material coding.
- Layout of the hot and cold distribution system marked separately.
- Types of service lines and solder.
- Fixture types labeled, including fixture material and specify lead content as known, probable or unknown based on the age of the fixture.

It is recommended systems identify service lines on the map at the location of the service entrance by selecting one of the color schemes and naming conventions listed below, and include a legend with or in the map.

#### Colors

Lead = 

Non-Lead = 

No Information = 

## VI. SUBMITTAL REQUIREMENTS:

The following requirements are to be submitted to respective parties by March 9, 2017, and updated and resubmitted every five years following the first submittal.

1. Submit a report to the appropriate Ohio EPA, Division of Drinking and Ground Waters (DDAGW) District Office containing, at minimum, the information below. (District Office addresses and phone numbers are listed in section IX of this guidance.)
  - a. The map detailed in section V of this guidance.
  - b. A list of sampling locations that are Tier I sites used to collect samples, as required by rules adopted under ORC Section 6109.121, including contact information for the owner and occupant of each sampling site. If there is not a sufficient number of Tier 1 sites available, systems should include Tier 2 sites to complete monitoring. Systems may meet this criterion by resubmitting their sample monitoring point ID sheet. This information should be resubmitted to the District Office as sites are updated.

Upon review, Ohio EPA may determine the initial map submittal is incomplete and request public water systems to resubmit the report, map or list of sampling locations as specified in this guidance.

2. Submit a copy of the map to the following agencies:

- a. Ohio Department of Health (ODH)  
Attn: Lead Program, 6th Floor  
246 North High Street  
Columbus, OH 43215

or

[BEH@odh.ohio.gov](mailto:BEH@odh.ohio.gov)

Subject: Lead Program

- b. Ohio Department of Job and Family Services (ODJFS)  
Office of Family Assistance – Bureau of Child Care Licensing and Monitoring  
P.O. Box 183204  
Columbus, OH 43218-3204

#### **VII. FINANCIAL ASSISTANCE:**

Financial assistance is available for systems for fulfilling the mapping requirements of ORC Section 6109.121. For more information, please see the tab “Drinking Water Assistance Fund” on the following web site: <http://epa.ohio.gov/ddagw/financialassistance.aspx>.

#### **VIII. HISTORY:**

The Division of Drinking and Ground Waters first issued this document on January 6, 2017.

**IX. OHIO EPA DISTRICT OFFICE CONTACT INFORMATION:**

**Central District Office**

Lazarus Government Center  
50 W. Town St., Suite 700  
P.O. Box 1049  
Columbus, OH 43215  
(614) 644-3020

**Southeast District Office**

2195 Front Street  
Logan, OH 43138  
(740) 385-8501

**Northwest District Office**

347 N. Dunbridge Rd.  
Bowling Green, OH 43402  
(419) 352-8461

**Southwest District Office**

401 E. Fifth St.  
Dayton, OH 45402  
(937) 285-6357

**Northeast District Office**

2110 E. Aurora Rd.  
Twinsburg, OH 44087  
(330) 963-1200