



pennsylvania
DEPARTMENT OF ENVIRONMENTAL
PROTECTION

Lead Ban Surveillance Project 2018

Bureau of Safe Drinking Water

Safe Drinking Water Program

Connor Sexton

Engineering, Scientific and Technical Intern

August 2018

Edited by Sabrina Haydt

Table of Contents

Introduction.....	3
Background: Solder.....	3
Background: The Plumbing System Lead Ban and Notification Act.....	4
Background: Implementation if the Act.....	5
Background: Inclusion of Other Retail Stores.....	5
Internship Project.....	5
Results: 2018 Surveillance Activity.....	6
Discussion: Why are Stores in Violation?.....	10
Conclusions: Trends and Suggestions.....	10
Appendix A: Survey Form.....	12
Appendix B: Information Packet.....	14

Introduction

Lead is an element occurring naturally in the environment. It can be introduced to the body through food and drink, as well as through inhalation or ingestion of non-food products containing lead. Lead is known to be toxic to humans, accumulating in the skeletal system, where it can remain for decades. Exposure to lead at levels as low as 0.015 mg/L in drinking water can lead to serious health problems such as developmental delays and attention deficits in children, and kidney problems and high blood pressure in adults. Additionally, prolonged exposure can cause brain, nervous system, and hearing damage along with headaches in children, as well as memory problems, pregnancy complications, reproductive problems, and muscle and joint pain in adults.

While lead does not usually occur naturally in water sources, it enters drinking water through corrosion of plumbing materials which the water passes through. Water becomes corrosive when it has a low pH, low mineral content, or high dissolved oxygen content. The Lead and Copper Rule of the Safe Drinking Water Regulations requires public water suppliers to install corrosion control treatment if the lead level is above 0.015 mg/L at more than 10% of the household taps that are sampled. The Pennsylvania Plumbing System Lead Ban and Notification Act, Act 1989-33 (Lead Ban Act), prohibits the use of leaded solders in potable water plumbing. Because of these regulations, lead exposure from drinking water has been significantly reduced over the last 25 years. The following report details the history of the Lead Ban Act and intern surveillance project, and provides a summary of the work completed by the most recent Lead Ban intern.

Background: Solder

Solder is an alloy of typically tin and lead used to seal or join metallic surfaces. There are two aspects by which solder is classified; core type and composition. The core is composed of rosin flux, acid flux or solid metal. Flux acts as a pretreatment to the metal being soldered, to help the solder stick and hold. Acid or solid core solders are usually preferred for plumbing purposes. The composition of solder is the percentage of metals contained in the solder. Some common solders, their composition, and uses can be found in Table 1.

Table 1: Common Solders and Their Uses.

Composition				Intended Uses
% Tin (Sn)	% Lead (Pb)	% Antimony (Sb)	% Silver (Ag)	
85	15			Plumbing, general purpose
50	50			Plumbing, auto repair, stained glass, general purpose
60	40			Electrical repair, stained glass, general purpose
40	60			Plumbing, general purpose
30	70			Auto body and radiator repair
95		5		Lead free, plumbing
95			5	Lead free, plumbing
5			95	Lead free, plumbing
			100	Lead free, plumbing
?	?	?	?	Commercial grade, general purpose

Background: The Plumbing System Lead Ban and Notification Act

The Lead Ban Act was enacted in an effort to strengthen the provisions of the PA Safe Drinking Water Act, in order to remain consistent with the Federal Safe Drinking Water Act Amendments of 1986. The Lead Ban Act helps to safeguard our public drinking water systems from harmful levels of lead. The Lead Ban Act was signed into law on July 6, 1989, and went into effect on January 6, 1991. One of the main purposes of this law is to “protect public health and safety by prohibiting the sale of certain materials commonly used in plumbing system construction, modification, and repair,” including leaded solders, pipes, pipe fittings, and fixtures.

The most recent revision to the Lead Ban Act was signed into law on June 12, 2014. This revision was made in response to the federal Reduction of Lead in Drinking Water Act which was signed into law on January 4, 2011, with an effective date of January 4, 2014. The purpose of the amendment to the Lead Ban Act was to revise the definition of “lead free” to be defined as follows:

“When used with respect to solders and flux, the term refers to solder and flux containing not more than 0.2% lead and, when used with respect to the wetted surfaces of pipes, pipe fittings, plumbing fittings and fixtures, the term refers to” those “containing not more than a weighted average of 0.25% lead.”

This new definition of “lead free” revised the allowable lead content of pipes and pipe fittings from 8% to 0.25% lead.

The Lead Ban Act also prohibits the sale and use of 50/50 and 85/15 tin-lead acid or solid core solders as well as solders with unlabeled lead content, such as “commercial grade” solder. All other leaded solder is restricted to non-plumbing use only, and may be sold in non-plumbing sections of retail stores. Table 2 outlines the status of solder in Pennsylvania based on the Lead Ban Act.

Table 2: Status of Common Solders Based on Composition and Core.

Tin-Lead Composition	Core	Status
? Commercial grade	Solid	Banned
? Commercial grade	Acid	Banned
50/50	Solid	Banned
50/50	Acid	Banned
85/15	Solid	Banned
85/15	Acid	Banned
? Commercial grade	Rosin	Restricted
50/50	Rosin	Restricted
85/15	Rosin	Restricted
60/40	All	Restricted
40/60	All	Restricted
30/70	All	Restricted
15/85	All	Restricted

The second important objective of the Lead Ban Act is to “provide for notice of the potential for leaded contamination of drinking water consumed by users of public water systems.” The Department has been granted the power and authority to administer and enforce Act 1989-33, which was written in compliance with the Lead Ban provision of the Federal Safe Drinking Water Act Amendments of 1986.

Background: Implementation of the Act

During the eighteen months between the signing and enactment of the Lead Ban Act, the Bureau of Water Supply and Wastewater Management (now the Bureau of Safe Drinking Water) developed the Pennsylvania Lead Ban Surveillance Program in order to eliminate the availability of leaded solders used for plumbing purposes. A public outreach campaign was designed to educate those audiences affected by the ban, including distributors, retailers, manufacturers, public water suppliers, plumbers and plumbing contractors. The campaign informed the public about the environmental and health effects of lead in drinking water through media reports and the distribution of pamphlets, fliers, and newsletters.

Background: Inclusion of Other Retail Stores

In 1999, the Department discovered that stained glass stores sell solder, and thus should be included in the Surveillance Program. In 2002, it was brought to the attention of the surveillance program that other retail establishments (i.e. auto parts stores) were selling banned and restricted solders. Additionally, in 2004, electronic stores were found to sell solder, and became included in the program. These stores carry solder for non-plumbing uses, such as in vehicle maintenance, electronic repair and the creation of stained glass decor. However, the Lead Ban Act states that no “person” may sell banned solder in the state, thus including any type of retail store. The presence of lead free and restricted solders is acceptable anywhere in these stores, as they do not have plumbing sections. However, the availability of banned solder is a violation of the Lead Ban Act. Section 4, “Prohibition of Sale of Plumbing Materials That Are Not Lead Free,” of the Act states:

“No person shall sell, exchange, or offer for sale within the Commonwealth any pipe, pipe fitting, solder or flux commonly used in plumbing systems that is not lead free. Solders that are not lead free and that are commonly used in plumbing systems include, but are not limited to, solid core or acid core solders, such as 50/50 tin-lead solder and 85/15 tin-lead solder.”

At the time that the Act was written, 50/50 and 85/15 acid and solid core solders were commonly used in plumbing systems and were therefore banned for sale in Pennsylvania so no one could be able to unintentionally use it in a plumbing system. This is the basis for surveying the other stores.

Initial surveys of these ‘other’ stores - auto parts, stained glass and electronics stores, were conducted in 2004 and 2005 to determine what solders are available (specifically whether banned solder is sold) and whether the program needed to be expanded to include these retail facilities as part of routine surveillance. Of the stores surveyed, several have been in violation of the Lead Ban Act, so these facilities are now included in stores to be surveyed. Since 2007, no distinction is made in the results section as to the difference between hardware and other retail stores. Surveys are conducted primarily at hardware stores, home centers, general department stores, plumbing supply stores, and auto parts stores. Also included are craft stores and electronics stores. Approximately 20% of retail stores in Pennsylvania that potentially sell solder are surveyed each year, with the goal of visiting each store in Pennsylvania at least once every five years.

Summary of the Internship Project

The primary purpose of the Lead Ban internship project is to ensure compliance with the Lead Ban Act. Interns employed by the Bureau of Safe Drinking Water conduct surveillance activities to gather data to ensure compliance with the ban of sale provision of the Lead Ban Act.

The internship project began in the summer of 1991 and continued in the summers of 1992, 1993, 1994 and 1995. Surveys were not conducted during 1996 and 1997, but were resumed in 1998 and continue to present day. From 1991 through 2001, a representative sample of stores in each county was

surveyed. However, as of 2002, surveillance is conducted completely in a select number of counties each year and all the stores in the selected counties are attempted to be surveyed. As stated earlier, approximately 20% of the retail facilities in the state are visited each year. If interns complete their assigned counties before the end of the summer, stores selling banned solder or found to be noncompliant at the time of their last visit are re-visited.

Interns are provided with a list of all stores previously known to sell solder in the assigned counties. Additionally, interns are responsible for searching for new stores using the Internet, phone books, and any other available resources. This list serves as a basis for surveys, with any stores encountered along the way being added to the list. During each survey, information is recorded on a survey form (Appendix A). The information gathered serves to determine the compliance status of the store. A store is either in compliance with, or in violation of, the Lead Ban Act. Noncompliance may include one of two violations. A store may be selling banned solder, or may be selling restricted solder in their plumbing section or with plumbing solder. It is possible for a store to have both types of violations. If a store does not have either type of violation, meaning that all restricted solder is sold in a non-plumbing section and there is no banned solder for sale, they are in compliance with the Lead Ban Act.

If banned solder is found or a store is selling any leaded solder in the plumbing section, the intern speaks with a manager or other store employee. During this meeting, the Lead Ban Act is summarized, and the reason for the potential violation is explained. Employees are asked to correct the problem by removing the banned solder, and/or moving the restricted solder to a non-plumbing section. Often, an information packet (consisting of a fact sheet summarizing the Lead Ban Act, a fact sheet summarizing the status of different solders and a copy of the Lead Ban Act) is left with store employees, regardless of their current compliance status, in order to remind them of the Lead Ban Act and its implications. A copy of this packet (excluding the Lead Ban Act) is found in Appendix B. Retailers are reminded that discarding leaded solder in the trash is prohibited by the Department's Waste Management regulations, and are encouraged to return the solder to their supplier for credit. If information about the manufacturer or supplier of the banned solder is available, it is recorded on the survey form. Based on the information gathered during these surveys, a DEP Safe Drinking Water Program staff member determines whether the retailer is in compliance with the provisions of the Lead Ban Act. Non-compliant retailers are sent a Compliance Notice within two weeks of the intern's visit as a written record of the visit and reminder of the appropriate corrective action(s).

Data collected during each survey is stored in a computer database. The Lead Ban database is updated and maintained on a regular basis throughout the summer to ensure an accurate list of store contact information as well as to keep track of their survey history. The database also generates various reports which help show the statistics of the Lead Ban Surveillance Program results over the years.

Results: 2018 Surveillance Activity

During the summer of 2018, 250 retail locations that potentially sell solder were inspected in 15 counties, as shown on the map in Figure 2 below. Of the 250 retailers in the database, 12 were confirmed inactive (out of business) via an in-person inspection, which resulted in 238 active retailers inspected. 220 surveys were routine (meaning these were retailers surveyed previously), 30 were initial inspections. The surveys show that there were 198 retail locations selling solder (83.1% of active), 40 of the active retailers did not sell solder (19.2%). Out of the 198 retailers selling solder, 118 were selling only lead-free solder and 56 were selling restricted solders in a non-plumbing section, such as tools, welding, or electrical, which is considered in compliance. However, 34 retail locations were in violation of the Lead Ban Act as they either had restricted solder in the plumbing section or they were selling one of the banned types of solder. It is important to note that 10 of the 34 non-compliant stores were also selling restricted solder in a non-plumbing section and are therefore counted among the 56 retailers

mentioned above. Of the 34 non-compliant stores, 22 were out of compliance because of keeping restricted solder in the plumbing section, while the other 12 stores out of compliance were selling banned solders. The stores selling banned solder were found in 8 of the 15 counties surveyed, and misplaced restricted solder was found in stores in 13 of the 15 counties. There were no facilities that were in violation of selling both banned solder and restricted solder located in the plumbing section.

The details of the surveillance from each county can be found below in Table 3. Lancaster (60), Montgomery (41), and Delaware (24) counties had the most amount of surveys completed among active stores. The counties of McKean, Warren, and Delaware had the most stores not in compliance with a total of 5 stores each. Of the 15 counties surveyed, Bedford and Cameron counties were the only ones to not have any stores in violation of the Lead Ban Act. Table 4 shows the 10-year trend of store percentages selling banned solder or *only* lead-free solder. Shown in Figure 1 below is the declining percentages of stores selling banned solder in correlation to the years that surveillance took place since surveying began in 1991.

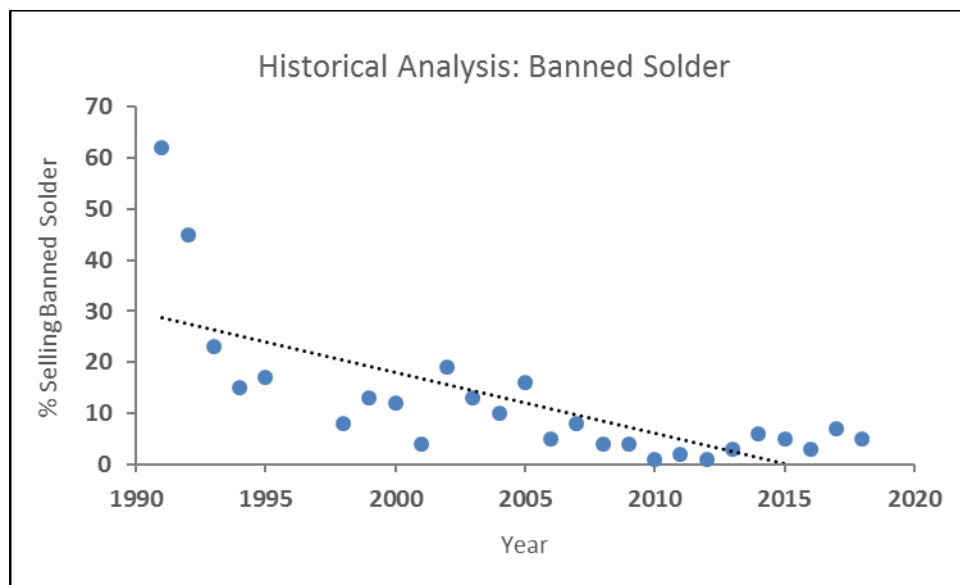


Figure 1: The percent of stores selling banned solder since 1991. (Note that no data was collected from 1996-1997.)

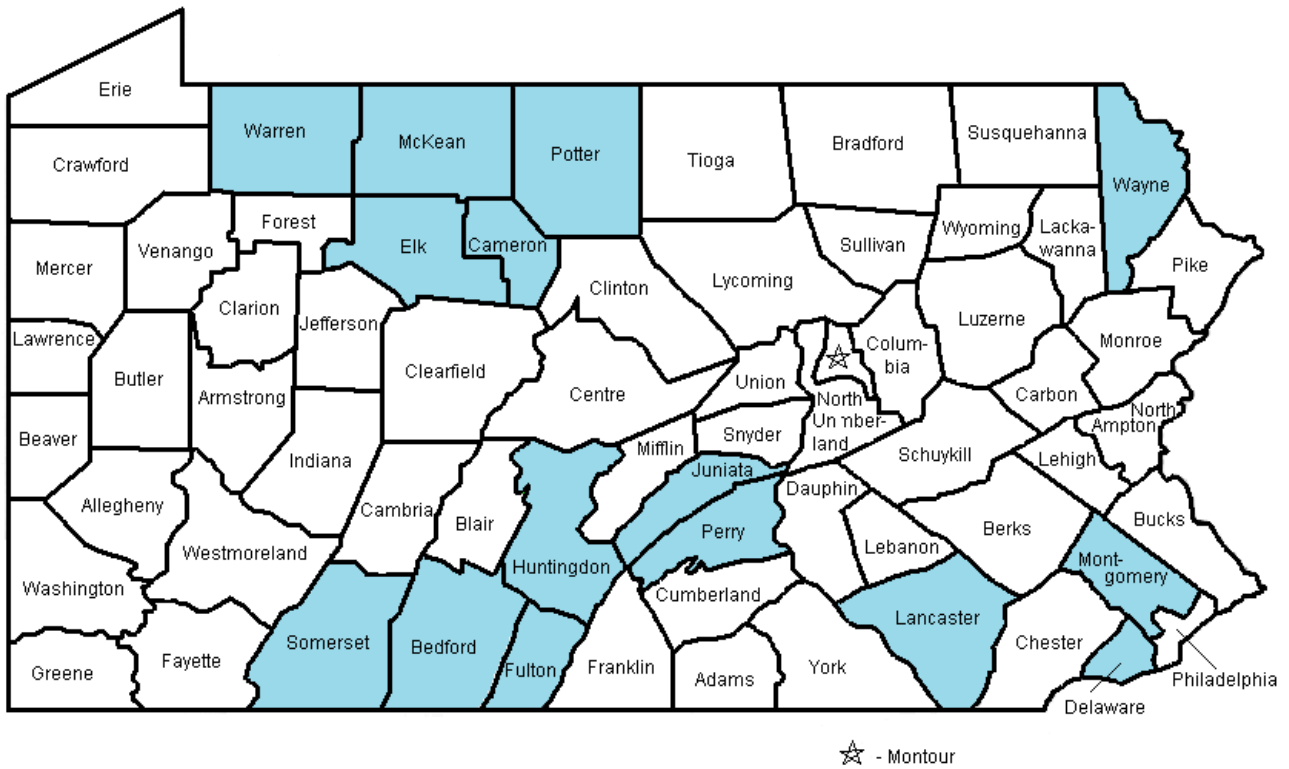


Figure 2: Counties in which routine and initial inspections, as well as re-inspections occurred in the summer of 2018.

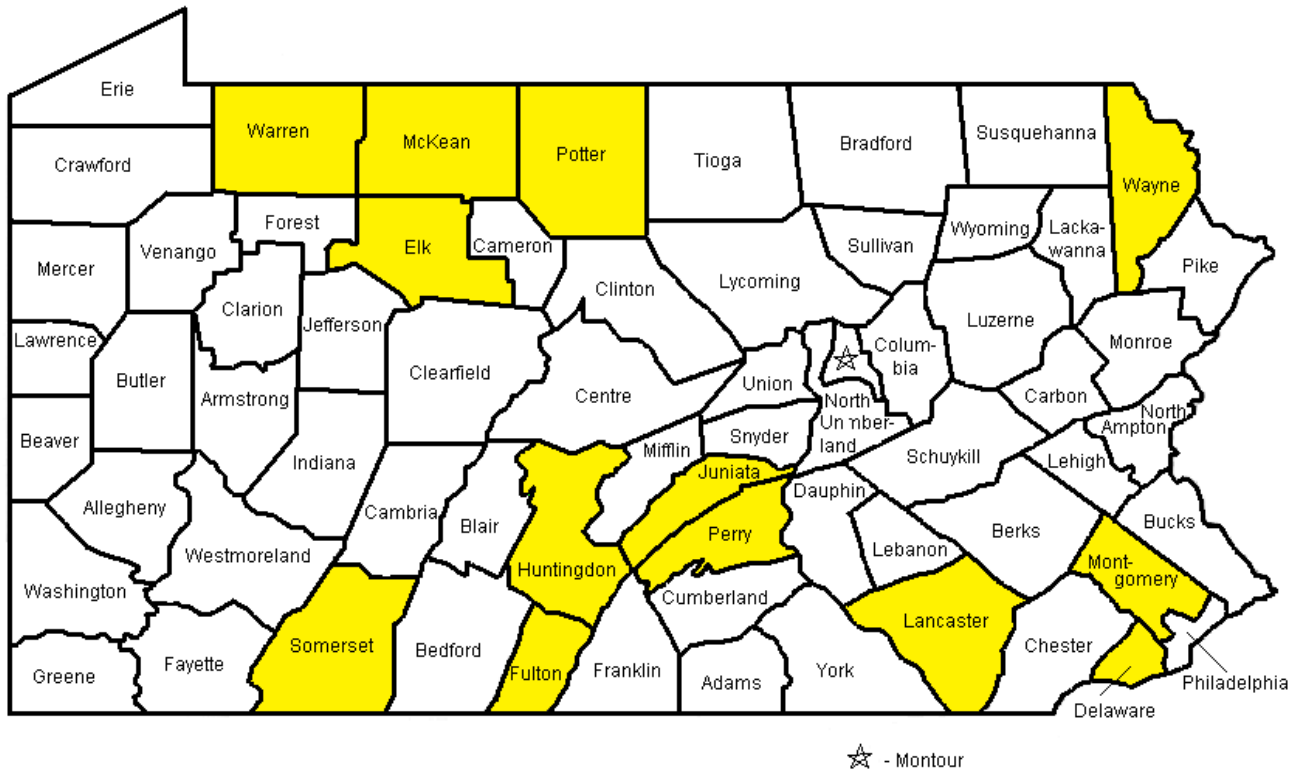


Figure 3: Counties in violation of the Lead Ban Act for either the sale of banned solder or restricted solder for sale in the plumbing section during surveillance activities of 2018.

Table 3: Summary of 2018 Surveys.

County Name	Total # Stores Surveyed	Total # Active Stores	Total # Inactive Stores	Total # Stores Selling Solder	Restricted in Place	Lead Free Only	Non-Compliant Stores	Banned Solder	Restricted Solder Out of Place	Banned & Restricted Out of Place
Bedford	9	9	0	9	2	7	0	0	0	0
Cameron	1	1	0	1	0	1	0	0	0	0
Delaware	24	22	2	15	5	6	5	1	4	0
Elk	12	12	0	11	5	5	1	0	1	0
Fulton	2	2	0	2	0	1	1	0	1	0
Huntingdon	16	16	0	12	1	9	2	0	2	0
Juniata	11	10	1	9	3	5	1	1	0	0
Lancaster	60	59	1	44	16	27	2	2	0	0
McKean	12	12	0	12	6	4	5	3	2	0
Montgomery	41	36	5	31	5	25	3	1	2	0
Perry	15	14	1	13	5	6	3	1	2	0
Potter	4	4	0	3	0	2	1	0	1	0
Somerset	18	16	2	13	4	8	1	0	1	0
Warren	10	10	0	10	1	4	5	1	4	0
Wayne	15	15	0	13	3	8	4	2	2	0
Total	250	238	12	198	56	118	34	12	22	0

Table 4: A 10-year comparison of stores selling Banned and Lead Free Solder, 2008-2018

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Stores Selling Solder	248	306	281	176	203	220	252	323	356	281	198
% Selling Banned Solder	4%	4%	1%	2%	1%	3%	6%	5%	3%	7%	6%
% Selling Only Lead-Free Solder	48%	45%	65%	79%	87%	71%	87%	71%	59%	57%	60%

Discussion: Why are stores in violation?

Since the implementation of the Pennsylvania Lead Ban Act, there has been a significant decrease in the number of stores that sell banned solder, even with small fluctuations over the years. This can be seen in Figure 1 in the previous section. As mentioned in the previous section, in the summer of 2018, 250 stores were surveyed in 15 different counties. Of the 250 stores, 238 retailers were active and 198 of the active stores sold solder. Of those 198 stores, 34 had violations with 22 having a violation based on the location of restricted solder and 12 having a violation because of the sale of banned solder.

Of the two categories of violations listed above, the greatest offence was the sale of banned solder. The average number of banned solders found within the 12 stores selling it was 1. The small, locally owned stores contributed to 9 of the 12 violations. The large auto chain stores of NAPA Auto Parts and Advance Auto Parts contributed to 3 of the 12 violations. So overall, the larger chains contributed little to the amount of banned solder. Small, family owned hardware stores were the most common place to find banned solder, as they contributed 9 of the 12 violations for banned solder. The Auto Parts stores that were in compliance all said that they had heard of the ban, removed the solder and already sent it back to the supplier, while the out of compliance store managers intended to do the same thing.

There are two main reasons stores had banned solder for sale: they were unaware that solders with an unknown composition are banned or they have too large of a stock of solders to keep track of. First, many stores that had banned solders were selling multiple different types of solder, but usually had a single roll that was not labeled as to its composition. This is treated as a banned solder because it is not clear what the contents are. The other reason stores had banned solder was that their inventory was big and hard to keep track of. One store had an impressive amount of solder – they even carried a large amount of bar solder, which the Lead Ban Act does not apply to. With so many different types of solder, stores could have numerous banned products as there could be multiple weights or diameters of the same type of solder; this led to many rolls being taken off the shelf. Most often the managers indicated they would call the manufacturer, who not only manufactured the product but also made their display plans, to tell them what solders are banned for sale in Pennsylvania. The overwhelming majority of store owners and managers were friendly and cooperative. There was only a handful of instances where a manager or store owner didn't seem to care or was dismissive.

The other type of violation is displaying and selling restricted solders in the plumbing section with plumbing solders. Over the last few years, the number of restricted out of place violations has stayed at a low rate with some fluctuations. During the 2018 surveillance, 22 stores were found to have restricted solder in the same location as the plumbing solder. Stores gave mixed reasons as to why they were not in compliance. Some said that an inexperienced employee must have stocked the restricted solder in the wrong area. Many owners explained that the manufacturer makes the displays changed the set up to put all solder together, mixing both restricted and lead-free plumbing solders. Often times in Ace, True Value, and Do-It-Best chains this was the case.

During the surveying of 250 stores, out of the 198 stores selling solder, 164 were in compliance with the Lead Ban Act. The continued high success rates of compliance can be greatly attributed to the continual and routine surveying of the retailers since the surveillance began in 1991.

Conclusion: Trends and Suggestions

Since the Pennsylvania Lead Ban Act was implemented in 1991, there has been a significant and steady reduction in the amount of banned 50/50 and 85/15 solder for sale in stores. When surveillance activities began in 1991, the percent of retailers selling banned solder was 62%, while the 2018 surveys

showed that currently only 6% of stores selling solder are selling banned solders. The results of the 2018 surveys show roughly 60% of retailers selling solder are selling only lead-free solders, which is on trend with the last couple of years. These statistics help to testify to the effectiveness of the Lead Ban Act since it was introduced. In the last few years, there has been an increasing number of stores not carrying any solder at all. In 2016, roughly 38% of the active stores did not sell solder, while in the current data shows that of the active stores surveyed, 20% do not sell solder. While this is less than the previous year, it is still higher than just two years ago, when only 7% of retailers choose not to sell solder. The surveillance activities conducted every year have helped to educate retailers into making the right choice for their customers when deciding what kind of solder to carry and sell (if any).

A major trend that appeared in the 2018 surveillance activities was that many of the smaller, locally owned stores were out of business. Out of the 250 surveys done, 12 were found out of business. One factor that could be leading to this is that in many areas, there has been an increase in the presence of large chain stores, such as Lowes, Wal-Mart, Home Depot, Tractor Supply Co, and NAPA Auto Parts. While there were many stores found to be out of business, there were also 30 new retailers added to the database during surveying in 2018, many of which were large chain stores. These stores draw more business and most only carry lead-free solders.

Since it began, the Lead Ban surveillance has yielded positive results. The continued goal of the surveillance activities is to ensure as many stores as possible are compliant with the Lead Ban Act. The goal has been increasingly met with few stores having violations in the last several years. With the trend of increasing chain store presence, as well as the continued openings of smaller, local businesses and retailers, there will always be new facilities in Pennsylvania. It is in the best interest of the state, and its citizens, to continue the surveillance and education activities to ensure compliance with the Lead Ban Act.

The full text of the Lead Ban Act can be found at:

<http://www.legis.state.pa.us/CFDOCS/Legis/PN/Public/btCheck.cfm?txtType=HTM&sessYr=1989&sessInd=0&billBody=S&billTyp=B&billNbr=0283&pn=1328>

The full text of Senate Bill No. 1254, 2014 amendments to the Lead Ban Act can be found at:

<http://www.legis.state.pa.us/cfdocs/legis/PN/Public/btCheck.cfm?txtType=PDF&sessYr=2013&sessInd=0&billBody=S&billTyp=B&billNbr=1254&pn=1773>

Appendix A: Survey Form



Pennsylvania Department of Environmental Protection

LEAD BAN SURVEY FORM

County ID#		County Name		Date		Last Survey Date (if known)		
Store ID#		Store Name			Contact Person & Title			
Location Address						Phone		
Mailing Address (if different from location)						Fax		
Store Type		Chain? Yes No		Chain Name		Inspection Type		
Solder Types Sold Banned		(circle all that apply) Restricted		Lead-Free		None		
Latitude _____						Longitude _____		Inspection ID _____
						Initial _____		
						Routine _____		
						Re-Insp. _____		

Status (B/R)	Manufacturer	UPC	% Sn/Pb	Core (A/R/S)	Label? (Y/N)	Diam (in.)	Wt. (oz.)	Qty.

(additional space if needed on back of form)

Where is restricted solder located? (if applicable) _____

Notes: _____

Owner Name (if different from store contact)	Phone	Fax	Email
Alternate Owner Address			
Wholesaler Name	Contact Person	Title	Phone
Wholesaler Address			Email
Wholesaler Alt. Address			

Solder Information (cont'd)

Status (B/R)	Manufacturer	UPC	% Sn/Pb	Core (A/R/S)	Label? (Y/N)	Diam (in.)	Wt. (oz.)	Qty.

Additional Comments:



PENNSYLVANIA LEAD BAN

Pennsylvania's *Plumbing System Lead Ban and Notification Act* (PA Lead Ban) became effective on January 6, 1991, and applies to all plumbing construction or repairs done after that date. Pennsylvania's law is similar to the 1986 amendments to the federal Safe Drinking Water Act (SDWA) and requires the use of lead-free materials in construction or repair of any public water system (PWS), any facility connected to a PWS, or any plumbing that provides water for human consumption.

The law was strengthened by the 1996 amendments to the federal SDWA. The amended law bans plumbing suppliers from selling after August 6, 1998, leaded solder or flux as well as pipe, fittings, or fixtures that are not lead-free and do not meet acceptable lead leaching standards. Further amendments to the federal SDWA, which took effect in 2011, revised the definition for lead-free to be any pipes or pipe fittings that contain less than or equal to 0.25 percent lead, and any solders or flux that contain less than or equal to 0.2 percent lead. Pipes, fittings, or fixtures that meet the lead leaching standards in the American National Standards Institute/NSF International (ANSI/NSF) Standard 61: *Drinking Water System Components – Health Effects* are deemed to be acceptable.

Why Ban Lead?

Although lead may be found in many places in our modern society, water is probably the easiest to control. Our drinking water can contain a significant amount of lead (up to 40 percent of a person's total lead exposure) as a result of corrosion of pipes, solder, and fixtures found in buildings or in the mains or service connection of a PWS. Solder containing lead is a major target under the PA Lead Ban since it is more likely to exceed allowable lead-content levels.

Pregnant women, their unborn children, young children (especially under the age of six), and middle-aged men and women are especially vulnerable to the health effects of lead. Exposure to lead above recommended levels may lead to delays in normal physical and mental development in babies and young children, cause slight defects in attention span, hearing and learning abilities in children, and may slightly increase blood pressure in some adults. Long-term exposure to lead above recommended levels may result in stroke, kidney disease, or cancer.

Summary of the PA Lead Ban

- PA's Lead Ban applies to all plumbing, not just plumbing used for drinking water.
- The Lead Ban forbids the sale and use of leaded solder, flux, pipe and pipe-fittings. These products were to have been removed from sale by January 6, 1991.
- Solders banned for sale in Pennsylvania include 50/50 and 85/15 tin-lead acid and solid core solders, leaded solders labeled for plumbing use or leaded solders not labeled as to content.
- Other leaded solders may be sold only if the package bears a prominent label stating that it is illegal to use the solder or flux in the installation or repair of any plumbing. Also, leaded solder is not allowed to be located in the plumbing section of the retail facility, nor in the proximity of plumbing materials in any establishment.
- The Lead Ban applies to all water users including private homes or facilities that obtain drinking water from private wells.
- A builder must certify that materials used in the construction of a new plumbing system, which is to be connected to a PWS are lead-free. A PWS must refuse connection to any person who fails to provide that certification unless the local municipality has a plumbing code that prohibits the use of leaded materials.

Further Information:

Plumbers

You may only use lead-free materials in any construction or repair work you do in Pennsylvania. Specific materials that may not be sold or used include:

- Lead Pipes.
- Copper or brass fixtures, pipe, or fittings not meeting the lead-free definition of 2011 and not meeting the lead leaching limits set in ANSI/NSF Standard 61 after August 6, 1998
- Solid and acid core solders or flux containing more than 0.2 percent lead.
- Solders not labeled lead-free or not labeled for lead content.
- Lead-containing solders labeled for plumbing use.

The Lead Ban does not apply to:

- Bulk lead normally used to repair cast iron pipe joints.
- Bar lead solder normally used in construction and repair of sheet metal, such as ductwork, roofing, etc.
- Any other lead solder not used in the plumbing industry (except 50/50 or 85/15 tin-lead solder). Solders that have automotive, electronic, industrial or other applications not related to plumbing are not banned. These solders have specifications distinct from solders commonly used for plumbing applications.

Private Wells

Although certification is not required for hook up to a private well, the PA Lead Ban applies to all plumbing applications. Home buyers, home owners, real estate agents, and contractors should be sure that only lead-free materials are used in all new plumbing construction and repairs.

Violation of the Lead Ban

If plumbing materials containing lead are used in Pennsylvania after January 6, 1991:

- The plumber may be required to replace the banned materials with lead-free materials at the plumber's own expense. In addition, a supply of an alternate, approved drinking water (bottled water) may be required until the plumbing is replaced.
- Monetary penalties may be assessed.

Federal law forbids the U.S. Department of Housing and Urban Development (HUD) and the Veteran's Administration (VA) from insuring or guaranteeing a mortgage, or from furnishing assistance, for a newly constructed residence if the new residence's potable water system is not lead-free.

For Additional Information:

Contact your local municipality if you suspect a local plumbing code violation.

If there is not a local plumbing code or if you suspect a violation of the ban of sale, please contact:

PA Department of Environmental Protection
Bureau of Safe Drinking Water
P.O. Box 8467
Harrisburg, PA 17105-8467
717-772-4018

For more information, visit www.dep.state.pa.us, keyword: Drinking Water.

Lead Solder: What Can I Sell?

DEP Fact Sheet for Wholesalers, Distributors and Retailers

The purpose of this fact sheet is to summarize how the Department of Environmental Protection (DEP) will implement and enforce the ban of sale of lead solders as required under Pennsylvania's (PA) Plumbing System Lead Ban and Notification Act. This law took effect on January 6, 1991 and prohibits both the sale and use of lead plumbing materials. Solders are a major target under the PA Lead Ban since they are more likely than other plumbing materials to exceed allowable lead-content levels.

Definition of Lead-Free under PA Lead Ban

- *Pipes and pipe fittings containing less than (<) 0.25 percent lead*
- *Solders and flux containing less than (<) 0.2 percent lead*

Solders Banned For Sale

These solders cannot be distributed or sold in wholesale or retail establishments in Pennsylvania.

- 50/50 and 85/15 solid core and acid core solders (as listed in the Act).
- Lead-containing solders labeled for plumbing use
- Solders not labeled lead-free or labeled as to content

Solders with Restricted Sale

- Lead-containing solders not banned for sale, including all rosin core solders, have sale restrictions. These solders are intended to be used for non-plumbing purposes.
- These solders cannot be sold or displayed in plumbing supply sections of general wholesale/retail stores or in the proximity of plumbing materials in any establishment.
- DEP suggests the plumbing wholesalers discontinue the sale of these solders because of the danger of their use for plumbing purposes, thus opening the wholesaler to liability under the Act.

See reverse side for ban status of various solders.

Solder Identification Table

Composition Weight %				Intended Use	Ban Status
Tin (Sn)	Lead (Pb)	Antimony (Sb)	Silver (Ag)		
85	15	--	--	Plumbing, general purpose	B
50	50	--	--	Plumbing, general purpose	B
60	40	--	--	General purpose, stained glass, electrical	R
45	55	--	--	General purpose	R
40	60	--	--	General purpose	R
35	65	--	--	Non-plumbing wiping	R
35	63.2	1.8	--	General purpose	R
40	58	2	--	General purpose	R
30	70	--	--	Auto body and radiators	R
25	75	--	--	Auto body and radiators	R
20	80	--	--	Auto body and radiators	R
2	98	--	--	Auto radiator cores	R
63	37	--	--	Electronic, circuit boards	R
70	30	--	--	Industrial-coating metals	R
62	38	--	--	Industrial-silver surfaces	R
15	85	--	--	Industrial-coating metals	R
10	90	--	--	Industrial-join/coat metals	R
5	95	--	--	Industrial-join/coat metals	R
--	97.5	--	2.5	Industrial-torch heating	R
--	94.5	--	5.5	Aircraft engines	R
20	79	1	--	Machine soldering	R
25	73.7	1.3	--	Machine soldering	R
30	68.4	1.6	--	Machine soldering	R
1	97.5	--	1.5	Food service equipment	R
62	36	--	2	Silver coated surfaces	R
96	--	--	4	Lead free	L
95	--	--	5	Lead free	L
94	--	--	6	Lead free	L
95	--	5	--	Lead free	L

B - Sale of acid and solid core solder completely banned.

R - Sale restricted. These solders cannot be sold or displayed in plumbing supply sections of general wholesale/retail stores or in proximity to plumbing materials in any establishment. The label cannot indicate plumbing as an intended use.

L - Sale legal.