

Pennsylvania Department of Environmental Protection

Lead Ban Surveillance Project 2008



Bureau of Water Standards and Facility Regulation
Safe Drinking Water Program

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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 prohibits the use of leaded solders in potable water plumbing. As a result of these regulations, lead exposure from drinking water has been significantly reduced over the last 15 years. The following report details the history of the Pennsylvania Lead Ban Act and intern surveillance project, and provides a summary of the work completed by the 2007 Lead Ban intern.

Background: Solder

Solder is a metallic compound 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 Pennsylvania Plumbing System Lead Ban and Notification Act, Act 1989-33 (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. Act 1989-33 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.

Lead free solders and flux may contain no more than 0.2% lead, while pipes, pipe fitting and other fixtures may contain no more than 8.0% lead. The 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 is permitted to 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: Solder Status 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 Act 1989-33 is to “provide for notice of the potential for leaded contamination of drinking water consumed by users of public water systems.” The Department of Environmental Protection (DEP) 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 Water Standards and Facility Regulation) 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.

Since 1991, the Bureau of Water Standards and Facility Regulation has hired a summer intern to implement the Lead Ban Surveillance Program. The main focus of the Surveillance Program is to conduct compliance checks on retail facilities where solder is commonly sold in order to ensure compliance with the Lead Ban Act. Initially, the program focused on the sale of solder at hardware stores only.

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 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 and 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 solid and acid 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 inspections 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. Only a small percentage of these facilities have been surveyed. Of the stores inspected, several have been in violation of the Act, so these facilities are now included in stores to be inspected. 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 inspected each year, with the goal of visiting each store in Pennsylvania at least once every five years.

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 Water Standards and Facility Regulation conduct surveillance activities in order to ensure compliance with the Ban of Sale provision of the Pennsylvania Plumbing System Lead Ban and Notification Act.

The internship project began in the summer of 1992 and continued in the summers of 1993, 1994 and 1995. Inspections were not conducted during 1996 and 1997, but were resumed in 1998 and continue to present day. From 1992 through 2001, a representative sample of stores in each county was inspected. However, as of 2002, surveillance is conducted completely in a limited number of counties each year. All stores in the selected counties are inspected. 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 inspection are re-inspected.

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 inspections, with any stores encountered along the way being added to the list. During each survey, information is recorded on a survey sheet, of copy of which is included in 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 selling restricted solder in their plumbing section. It is also 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 considered to be in compliance with the Lead Ban Act.

If a store is found to be noncompliant, the intern speaks with a manager or other store employee. The Lead Ban Act is summarized, and the reason for the violation(s) 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 including a copy of the Act is left with store employees, regardless of their current compliance status, in order to remind them of the Act and its implications. A copy of this packet (minus the 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 store credit. If information about the manufacturer or supplier of the banned solder is available, it is recorded. Noncompliant retailers are also sent a Violation Notice within two weeks of the intern's visit, as a written record of the visit and reminding them of the appropriate corrective action(s).

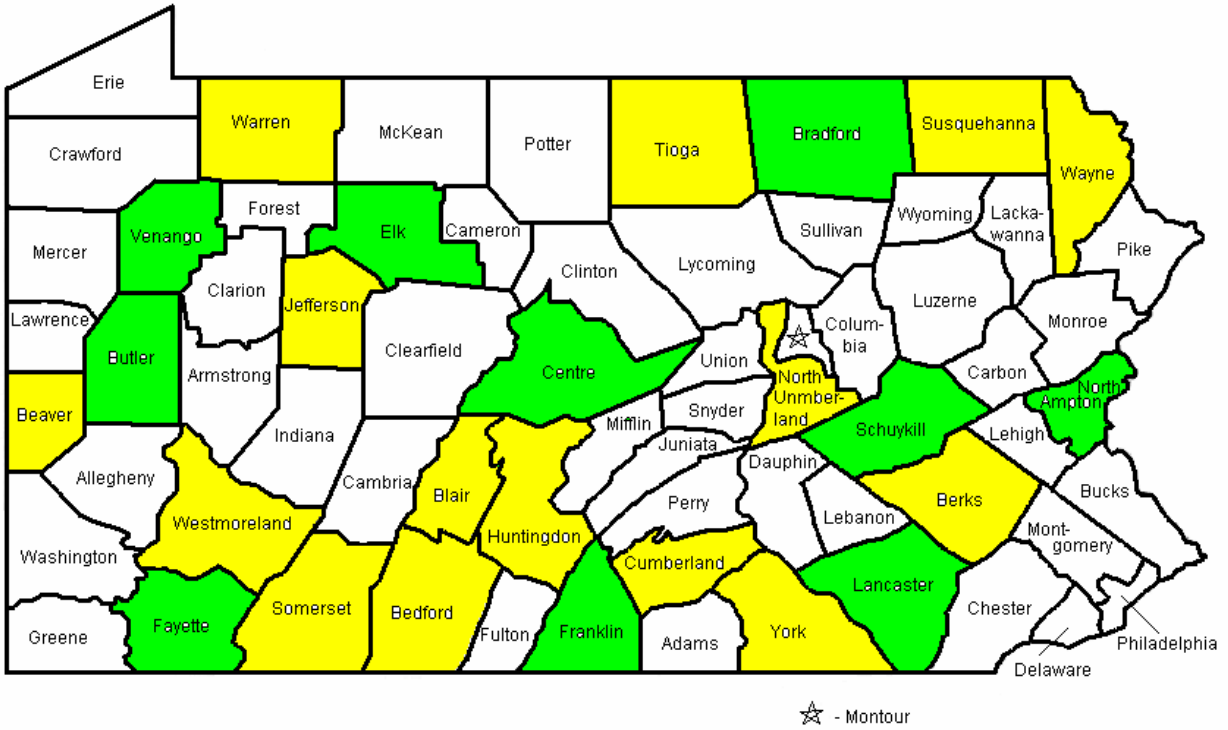
Data collected during each survey is stored in a computer database. The Lead Ban database is updated and maintained on a regular basis throughout the summer to ensure an accurate list of store contact information as well as to keep track of their inspection history. The database has undergone several revisions over the years, and is very valuable in making office time efficient and productive for the intern. The database also serves to create various reports which help show the statistics of the Lead Ban Surveillance project results over the years.

Results: 2008 Surveillance Activity

This summer a total of 322 stores potentially selling solder were inspected in 25 different counties. Of the 322 stores inspected, 248 sold solder. A majority of the 74 remaining stores went out of business, while some lumber yards and other stores remained active but no longer sold solder. Of the stores carrying solder, 214 had lead solder for sale, 118 of which sold only lead free solder. Twenty-three (23) of the 248 stores (9.3%) selling solder were in violation of the Pennsylvania Lead Ban Act. Restricted solder was found in the plumbing section of 14 stores or 5.6% of the total stores selling solder. Banned solder was found in 9 stores or 3.6% of the total stores selling solder. These stores were located in six of the different counties inspected. This summer no violations were found for selling both banned solder and leaded solder in the plumbing section. A summary of inspection results for 2008 is provided in Table 3.

Included in the above results are re-inspections that were conducted in 15 of the 25 counties that were inspected this summer. The re-inspections account for 28 of the total 322 stores inspected. Of the 28 re-inspections, 26 stores were selling solder. The results of the re-inspections were very positive because there were no stores in violation. There was no longer banned solder for sale in these stores, and had no restricted solder for sale in the plumbing section. The results of the re-inspections are also included in Table 3 on page 8.

Figure 1: Counties inspected in 2008.



* *Green Counties completely inspected, while yellow counties were re-inspected.*

Figure 2: Counties selling banned solder in 2008.

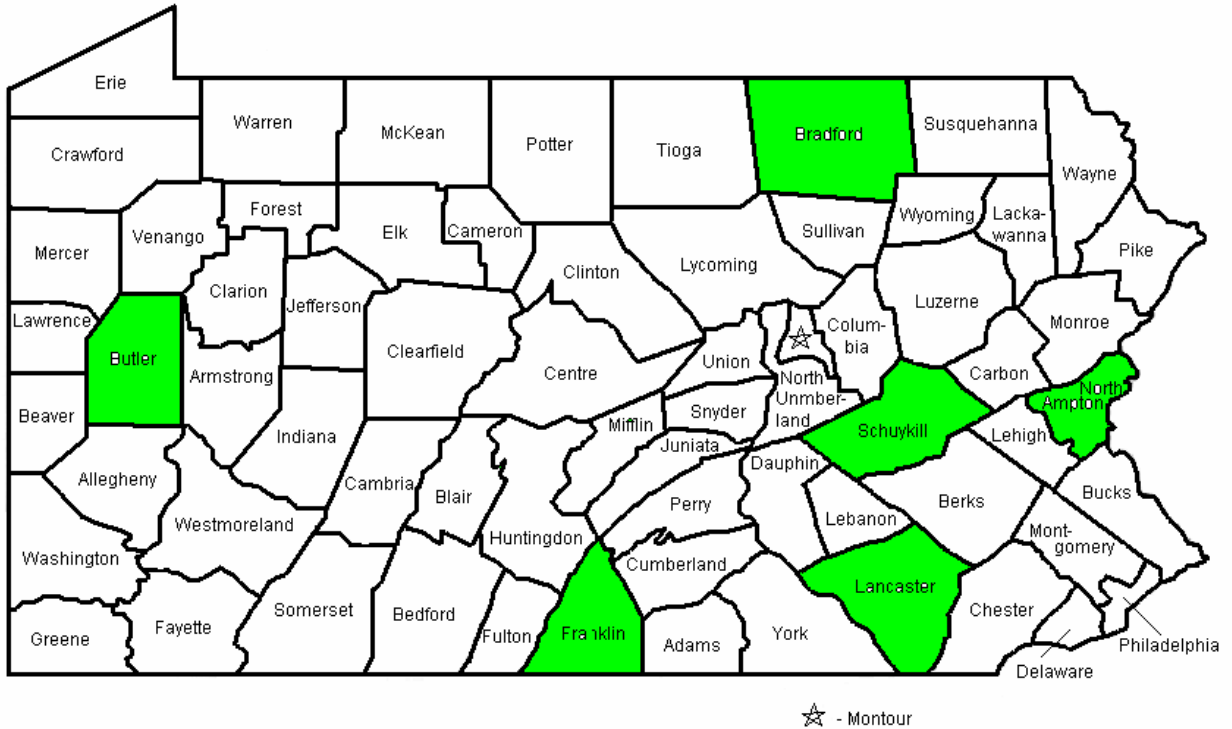


Table 3: Summary of 2008 Inspections and Re-inspections

County ID Number	County Name	Total Stores Inspected	Total Stores Selling Solder	Non-Compliant Stores	Stores Selling Banned Solder	Restricted Solder in Plumbing Section	Restricted Solder in Non-Plumbing	Lead Free Sold	Lead Free Only
04	Beaver*	2	2	0	0	0	2	1	0
05	Bedford*	1	1	0	0	0	0	1	1
06	Berks*	4	4	0	0	0	4	4	0
07	Blair*	2	2	0	0	0	0	2	2
08	Bradford	27	23	3	1	2	10	21	10
10	Butler	31	21	1	1	0	7	20	14
14	Centre	31	26	2	0	2	10	22	14
21	Cumberland*	1	1	0	0	0	0	1	1
24	Elk	10	10	0	0	0	2	9	8
26	Fayette	21	16	1	0	1	8	13	7
28	Franklin	48	36	3	1	2	7	31	20
31	Huntingdon*	1	1	0	0	0	1	1	0
33	Jefferson*	1	1	0	0	0	1	1	0
36	Lancaster	47	39	8	3	5	28	32	9
48	Northampton	19	14	4	2	2	7	10	5
49	Northumberland*	3	3	0	0	0	1	3	2
54	Schuylkill	37	23	1	1	0	10	21	12
58	Susquehanna*	1	1	0	0	0	0	1	1
56	Somerset*	3	2	0	0	0	1	2	1
59	Tioga*	2	2	0	0	0	1	2	1
61	Venango	23	14	0	0	0	4	12	9
62	Warren*	1	1	0	0	0	1	1	0
64	Wayne*	2	2	0	0	0	2	1	0
65	Westmoreland*	1	1	0	0	0	1	1	0
67	York*	3	2	0	0	0	1	1	1
Totals		322	248	23	9	14	109	214	118

It is difficult to determine a trend for data prior to 2001, because the method of surveying the stores was changed after the 2001 internship. As previously noted, since 2002, stores are surveyed county by county, instead of inspecting a few representative stores in each county, as was the procedure in the past.

Table 4: Comparison of Stores Selling Banned Solder 1991-2008

	1991	1992	1993	1994	1995*	1998*	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Stores Selling Solder	94	480	141	153	130	99	168	186	187	245	260	194	114	181	260	248
Percent Selling Banned Solder	62%	45%	23%	15%	17%	8%	13%	12%	4%	19%	13%	10%	16%	5%	7.7%	3.6%

(*No data was collected 1996-1997).

Note: years in bold font mark the change in surveying methods.

Discussion: Why are stores in violation?

A reason for violation can be attributed to a lack of awareness of all of the provisions of the Lead Ban Act. When store employees were asked if they were familiar with the Act, many had heard of it but did not know all of the Act's components. A slight majority of the banned solder violations this year were found during initial inspections. This helps to prove that stores who had not been previously inspected or informed about the Act are more likely to be in violation. Of the remaining stores selling banned solder, store owners were under the impression that 50/50 solder could be sold if it was not in the plumbing section. Similar situations occurred with violations regarding restricted leaded solder placement. Often, when a restricted solder is found in the plumbing section, it is attributable to the fact that store owners like to have all solder located together in the store. Some store owners did not understand that even if the solder is labeled for electrical use only, they cannot sell it in the plumbing section due to the risk that a customer may use it for plumbing purposes. Most store owners understood the problem, and were willing to move the solder to a different section of the store.

Last year, in 2007, many stores that were re-inspected were still in violation of the Lead Ban Act. That is a distinct contrast with this summer because there were no violations found during re-inspections. The lack of violations from re-inspections this year proves that the stores that were surveyed last year wanted to be in compliance with the Act, and took their violations seriously. This proves that the intern program is helpful because it continues to inform store owners of what solder they can sell, and where they can sell it to be in compliance.

Other examples that demonstrate that education is the key to compliance are the results from this year's inspections of auto part retailers. In recent years, many of these retailers were in violation of the Act as they were added to the list of stores to inspect. These stores had a higher percentage of violations within the past three years than this year. Some of these retailers are still not aware of the Act or how it applies to their stores. However, violations are decreasing because it is apparent that distributors were informed of the Act, as no 50/50 was found in an auto store this year. Some of the larger auto part retailer chains have even switched to lead free solder.

Conclusions: Trends and Suggestions

The Lead Ban program has made a great impact on the availability of 50/50 and 85/15 tin-lead solders in Pennsylvania. As can be seen in Table 4, the number of stores selling banned solder has dropped significantly since 1991. Since 1994, less than 20% of the stores inspected each year had banned solder for sale. This is a great contrast to the 62% of stores which sold banned solder in the program's initial year. There is no doubt that the Lead Ban program and the efforts of the Lead Ban interns have been effective. One example is that this year's results have yielded the least percentage of stores selling banned solder since the start of the program.

As time progresses and the program continues, there are different trends that will appear. This year a prominent trend was that many stores on the list had gone out of business. It would not be uncommon to have ten stores in a given county go out of business, and be replaced with one Lowe's or Home Depot. If this trend continues, it will reduce the amount of stores that will potentially sell banned solder because every larger chain inspected this summer sold only lead free solder. Many of the initial inspections this year were at large chains and auto stores. In both cases there were no violations to report, which indicates that many stores are aware of the Lead Ban Act. However, initial inspections that were not done at large chain stores were less aware of the Act, and five of the stores were selling banned solder. This demonstrates that future efforts must be made to extend information about the Act to all solder retailers in Pennsylvania.

Another trend that occurred this summer was that re-inspections yielded much more positive results than in 2007. There were no violations with re-inspections this year, so that indicates that some stores do want to be in compliance, and are willing to discard banned solder after they have been told to do so. However, considering that the re-inspections in different stores last year were not as successful, it cannot be ruled out that some stores with a history of noncompliance will continue to be noncompliant in the future. Therefore, there should still be a focus on re-inspections as the behavior of stores varies depending on its owners and affiliations.

A final trend evident this year was the lowest percentage of banned solder sold in stores selling solder since the start of the program. If the counties visited this year are representative of the whole state of Pennsylvania, the percentage of stores selling banned solder should remain low or drop further in the future. The more stores that discontinue the sale of 50/50 solder, the more likely it is that consumers will no longer look for the product. However, 50/50 solder is still for sale in Pennsylvania as the nine violations point out. This number is not nearly as alarming as the number of stores noncompliant in 1991, but it is still evident that the Lead Ban Act is in need of enforcement.

Appendices

See following pages.



Fact Sheet

Commonwealth of Pennsylvania • Department of Environmental Protection

PENNSYLVANIA LEAD BAN

In July 1989, Pennsylvania passed *The Plumbing System Lead Ban and Notification Act* (PA Lead Ban). The law became effective on January 6, 1991 and applies to 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). The federal law requires the use of lead-free materials in construction or repair of any public water systems (PWS), any facility connected to a PWS, or any plumbing that provides water for human consumption. Lead-free is defined as any pipes or pipefittings that contain less than 8 percent lead, and any solders or flux that contain less than 0.2 percent lead. The law was further strengthened by the 1996 amendments to the federal SDWA. The amended law bans plumbing suppliers from selling after August 6, 1998 both leaded solder or flux and pipe, fittings, or fixtures that are not lead-free and do not meet acceptable lead leaching standards. Pipes, fittings, or fixtures that meet the lead leaching standards in 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. Solders are a major target under the PA Lead Ban since they are 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, 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 as well as the use of leaded solder, flux, pipe, and pipefittings. These products were to have been removed from sale by January 6, 1991.
- Solders banned for sale in PA 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.
- 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 and not meeting the lead leaching limits set in ANSI/NSF Standard 61 after 8/6/98.
- Solid and acid core solders or flux containing more than 0.2 % 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.

Builders, Real Estate Agents, Property Owners, Municipal Officers, and Public Water Suppliers

After 1/6/91, before a newly constructed home or building may connect to a public water system (PWS), the individual requesting the connection must certify to the PWS that the materials used in the plumbing system are lead-

free or the local plumbing code must require that lead-free materials be used.

The PWS must refuse connection if proper certification is not provided and the municipality does not have a suitable plumbing code.

Private Wells

Although certification is not required for hook up to a private well, the PA Lead Ban applies to all plumbing applications. Homebuyers, homeowners, 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 US 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 isn't a local plumbing code or if you suspect a violation of the ban of sale, please contact:

PA Department of Environmental Protection
Bureau of Water Standards & Facility
Regulation
PO Box 8467
Harrisburg, PA 17105-8467
(717) 772-4018

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 (<) 8.0 % lead*
- *Solders and flux containing less than (<) 0.2 % 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 the banned 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 - Lead Free.