



Lead Ban Surveillance Project 2013

Bureau of Safe Drinking Water
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, Act 1989-33 (Lead Ban 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 20 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.

Currently, 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 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 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 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 of 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 considered to be 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. 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 store 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 reminding them of the appropriate corrective action(s).

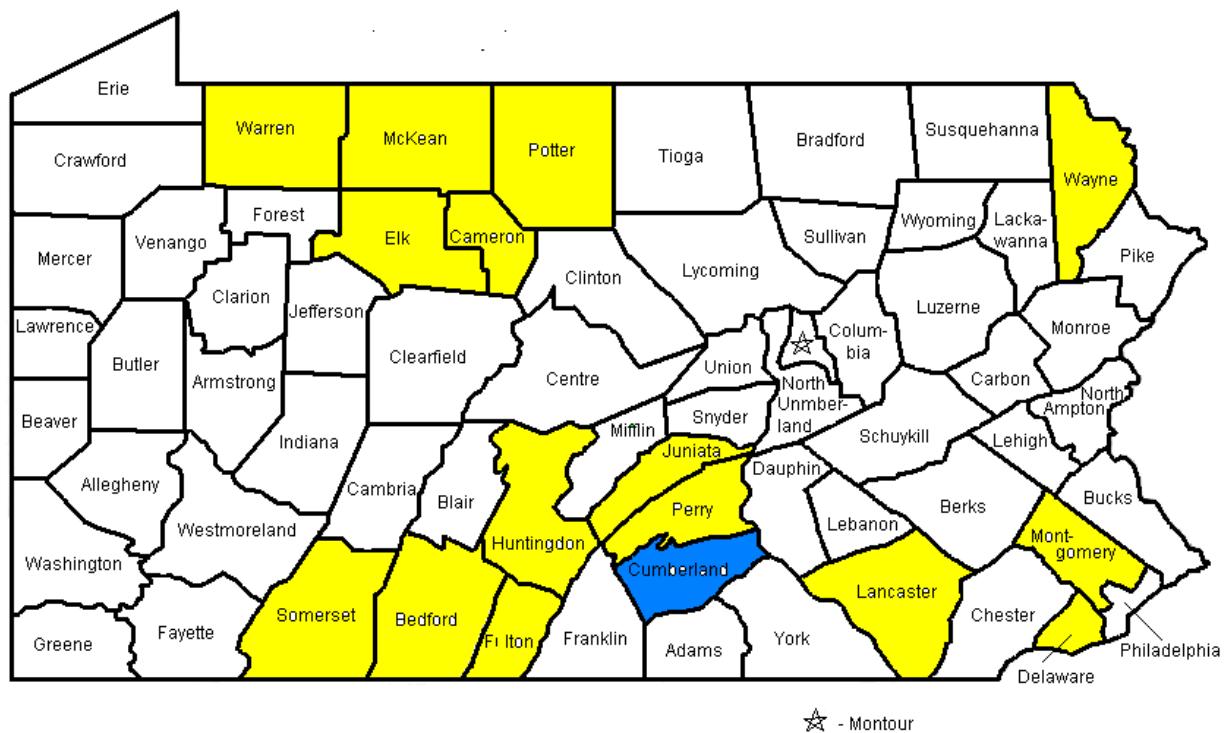
Data collected during each survey is stored in a computer database. The Lead Ban database is updated and maintained on a regular basis throughout the summer to ensure an accurate list of store contact information as well as to keep track of their survey history. The database also generates various reports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

Results: 2013 Surveillance Activity

During the summer of 2013, 363 retail stores potentially selling solder were surveyed in 16 different counties. Of the 363 surveys conducted, 362 were routine and one was a re-visit. Through these surveys, it was determined that 220 stores (61%) sold solder, 56 stores did not have solder for sale, and 87 stores were inactive. Of the stores selling solder, 51 had restricted use leaded solder for sale in a non-plumbing area and 155 were selling only lead-free solder. Fourteen of the 220 stores selling solder were in violation of the Lead Ban Act. Restricted solder was found in the plumbing section or found in proximity to plumbing materials in 8 of the 220 stores selling solder. Banned solder was found in 5 stores of the total stores selling solder. One facility was in violation both for selling banned solder and because restricted solder was located in the plumbing section. The stores selling banned solder were located in 6 of the 16 different counties visited and restricted solder in violation of the Lead Ban Act was found in 9 of the 16 different counties. Twenty-five of the 363 stores visited were surveyed for the first time in 2013.

Included in the results above was one re-visit conducted in 1 of the 16 counties surveyed this summer. For the purpose of this report, a store visit was classified as a re-visit if the store was found to be in violation of the Lead Ban Act within the last year. That store was found to be out of business upon the re-visit. A summary of the survey results by county for 2013 are provided in Table 3.

Figure 1: Counties surveyed in 2013



Note: Yellow indicates counties that were completely surveyed, and blue indicates counties that were partially surveyed.

Figure 2: Counties selling banned and restricted out of place solder 2013

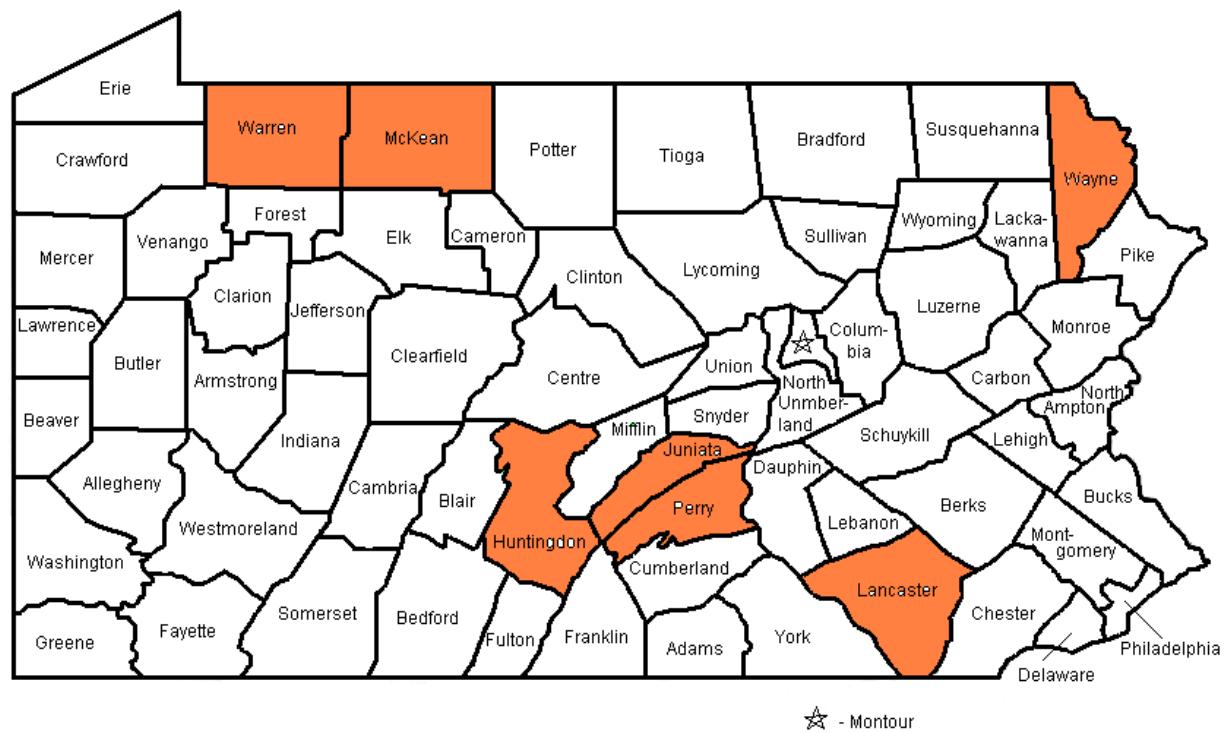


Table 3: Summary of 2013 Surveys

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	14	11	3	10	0	10	0	0	0	0
Cameron	1	1	0	1	1	0	0	0	0	0
Cumberland	1	0	1	0	0	0	0	0	0	0
Delaware	39	26	13	18	0	18	0	0	0	0
Elk	13	11	2	10	4	6	0	0	0	0
Fulton	2	1	1	1	0	1	0	0	0	0
Huntingdon	16	13	3	9	1	7	1	0	1	0
Juniata	14	10	4	8	1	6	1	1	0	0
Lancaster	109	89	20	63	27	33	3	1	2	0
McKean	17	11	6	11	4	5	2	1	1	0
Montgomery	54	40	14	33	4	29	0	0	0	0
Perry	12	11	1	11	1	6	4	1	3	0
Potter	16	7	9	7	1	6	0	0	0	0
Somerset	28	23	5	21	3	18	0	0	0	0
Warren	13	12	1	11	2	7	2	1	1	0
Wayne	14	10	4	6	2	3	1	0	0	1
Total	363	276	87	220	51	155	14	5	8	1

Table 4: Comparison of stores selling Banned and Lead Free Solder, 2004 – 2013

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Stores Selling Solder	194	114	181	260	248	306	281	176	203	220
% Selling Banned Solder	10%	16%	5%	8%	4%	4%	1%	2%	1%	3%
% Selling Only Lead-Free Solder	53%	39%	49%	52%	48%	45%	65%	79%	87%	71%

Discussion: Why are stores in violation?

The Lead Ban Act, in the state of Pennsylvania, has significantly reduced the number of stores found to be selling the banned 50/50 and 85/15 solder. There were 276 active stores surveyed in 16 counties over the summer, and of those 276 stores only 6 were found to be selling banned solder. However, the Lead Ban Act has been in effect since 1991, so why are there still some stores selling the banned product? The stores that were selling the banned solder were primarily located in remote areas of the state and independently owned; owners of these stores claimed to be unaware of this law. After being made aware of the Act and having a brief discussion of the Fact Sheet provided, the owners had no issue with removing the banned product and hoped to get a refund from the supplier. One of the non-compliant stores had recently been purchased from a previous owner and they maintained the same inventory. The new owner had not known that the banned solder was among the contents and removed the solder from the shelf.

Restricted solder being sold in the plumbing department was the most common violation found throughout the 2013 summer survey. Out of the 276 active stores 9 were selling restricted solder in the plumbing section or in proximity to plumbing materials and were therefore out of compliance. The managers/owners did not realize that they were not in compliance as the majority of these stores were of a chain and set up the aisles according to schematics sent to them from their corporate office. After being made aware of the violation in having the solder placed with the plumbing instead of the electrical, the proper action was taken and the solder was moved.

Of the 276 active stores, 220 stores sold solder, and from those 206 stores were in compliance. The high success rate of stores being in compliance is probably due to the site visits and re-visits conducted since 1991.

Conclusion: Trends and Suggestions

Since 1991, the availability of banned 50/50 and 85/15 solder in Pennsylvania has significantly decreased. The 2013 summer survey indicates that only 6 out of the 276 active stores sold the banned solder. This figure helps to demonstrate the effectiveness of the Lead Ban Act program since its start in 1991, when 62% of all active stores sold banned solder. With surveys being conducted on a regular basis, it is a constant reminder to the store owners to stay in compliance as well as raising the awareness of the damages caused by lead.

The chart compiled for the summer 2013 indicates that out of the 276 active stores, 155 sell **only** lead free solder. Every year the number of stores that sell only lead free solder continues to climb. When evaluating the results of the surveys conducted over the years, it can be easily translated to the program being very effective. As the years go by, large corporate chains are replacing the small independently owned stores and it is those chain stores that make up the majority of retailers selling only lead free solder.

During the 2013 surveys there was difficulty in locating some of the stores due to the 911 address change that had occurred in recent years. Many stores had not been surveyed since prior to that change and therefore research via the internet and telephone was conducted to determine accurate addresses. In light of this situation, latitude and longitude of the retail locations were noted. In the near

future, the coordinates will be put into a GIS mapping tool for easier location for future interns. Most of the addresses were updated this summer which should make it easier for subsequent interns when conducting surveys.

The Lead Ban surveys need to continue as there are many stores in the state of Pennsylvania that have not been inspected in several years and new stores are constantly opening. It is this vigilance that will keep our drinking water safe now and in the future.

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>



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 Initial _____ Routine _____ Re-Insp. _____
Solder Types Sold (circle all that apply) Banned Restricted Lead-Free None			
Latitude _____		Longitude _____	
Inspection ID _____			

(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)

Additional Comments:

Appendix B: Information Packet



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 Jan. 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 Aug. 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. 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 Jan. 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.
- 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 Aug. 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.

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

After Jan. 6, 1991, 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. 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 Jan. 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 and Facility
Regulation
P.O. Box 8467
Harrisburg, PA 17105-8467
(717) 772-4018

For more information, visit DEP's Web site at www.depweb.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 (<) 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.

Appendix B: Information Packet

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.