

Benjamin Franklin's Letter

Benjamin Vaughan was a youthful admirer and close friend of Benjamin Franklin, who was 80 years old when he wrote this letter to Vaughan. The letter is reproduced here with the original spelling.

Philadelphia
July 31, 1786

Dear Friend,

I recollect that when I had the great pleasure of seeing you at Southampton, now a 12 month since, we had some conversation on the bad effects of lead taken inwardly; and that at your request I promis'd to send you in writing a particular account of several facts I then mention'd to you, of which you thought some good use might be made. I now sit down to fulfil that promise.

The first thing I remember of this kind, was a general discourse in Boston when I was a boy, of a complaint from North Carolina against New England rum, that it poison'd their people, giving them the dry bellyach, with a loss of the use of their limbs. The distilleries being examin'd on the occasion, it was found that several of them used leaden still-heads and worms, and the physicians were of the opinion that the mischief was occasion'd by that use of lead. The legislature of the Massachusetts thereupon pass'd an act prohibiting under severe penalties the use of such still-heads & worms thereafter. Inclos'd I send you a copy of the act, taken from my printed law book.

In 1724, being in London, I went to work in the printing-house of Mr. Palmer, Bartholomew Close as a compositor. I there found a practice I had never seen before, of drying a case of types, (which are wet in distribution) by placing it sloping before the fire. I found this had the additional advantage, when the types were not only dry'd but heated, of being comfortable to the hands working over them in cold weather. I therefore sometimes heated my case when the types did not want drying. But an old workman observing it, advis'd me not to do so, telling me I might lose the use of my hands by it, as two of our companions had nearly done, one of whom that us'd to earn his guinea a week could not then make more than ten shillings and the other, who had the dangles, but seven & sixpense. This, with a kind of obscure pain that I had sometimes felt as it were in the bones of my hand when working over the types made very hot, induc'd me to omit the practice. But talking afterwards with Mr. James, a letter-founder in the same Close, and asking him if his people, who work'd over the little furnaces of melted metal, were not subject to that disorder; he made light of any danger from the effluvia, but ascrib'd it to particles of the metal swallow'd with their food by slovenly workmen, who went to their meals after handling the metal, without well-washing their fingers, so that some of the metalline particles were taken off by their bread and eaten with it. This appear'd to have some reason in it. But the pain I had experienc'd made me still afraid of those effluvia.



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Being in Derbshire at some of the furnaces for smelting of lead ore, I was told that the smoke of those furnaces was pernicious to the neighboring grass and other vegetables. But I do not recollect to have heard any thing of the effect of such vegetables eaten by animals. It may be well to make the enquiry.

In America I have often observed that on the roofs of our shingled houses where moss is apt to grow in northern exposures, if there be any thing on the roof painted with white lead, such as balusters, or frames of dormant windows, &c. there is constantly a streak on the shingles from such paint down to the eaves, on which no moss will grow, but the wood remains constantly clean & free from it.—we seldom drink rain water that falls on our houses; and if we did, perhaps the small quantity of lead descending from such paint, might not be sufficient to produce any sensible ill effect on our bodies. But I have heard of a case in Europe, I forgot the place, where a whole family was afflicted with what we call the dry-bellyach, or Colica Pictonum, by drinking rain water. It was at a country seat, which being situated too high to have the advantage of a well, was supply'd with water from a tank which receiv'd the water from the leaded roofs. This had been drank several years without mischief; but some young trees planted near the house, growing up above the roof, and shedding their leaves upon it, it was suppos'd that an acid in those leaves had corroded the lead they cover'd, and furnish'd the water of that year with its baneful particles & qualities.

When I was in Paris with Sir John Pringle in 1767, he visited La Charite, a hospital particularly famous for the cure of that malady, and brought from thence a pamphlet, containing a list of the names of persons, specifying their professions or trades, who had been cured there. I had the curiosity to examine that list, and found that all the patients were of trades that some way or other use or work in lead; such as plumbers, glasiars, painters, &c. excepting only two kinds, stonecutters and soldiers. These I could not reconcile to my notion that lead was the cause of that disorder. But on my mentioning this difficulty to a physician of that hospital, he inform'd me that the stonecutters are continually using melted lead to fix the ends of iron balustrades in stone; and that the soldiers had been employ'd by painters as labourers in grinding of colours.

This, my dear friend, is all I can at present recollect on the subject. You will see by it, that the opinion of this mischievous effect from lead, is at least above sixty years old; and you will observe with concern how long a useful truth may be known, and exist, before it is generally receiv'd and practis'd on.

— I am, ever,
Yours most affectionately
B. Franklin

Student Questions

1. What two symptoms of lead poisoning does Ben Franklin describe in his letter?
2. What are six different ways people came in contact with lead in Ben Franklin's day?
3. It is now more than 200 years since Ben Franklin wrote this letter. How do you think people come in contact with lead today?
4. Do you think lead poisoning is still a concern today?



What Is Lead Poisoning?

Lead is a heavy metal that is used in many materials and products. When lead is absorbed into the body, it is harmful to many organs and systems. Lead poisoning is the effect of lead on the body.

Lead is especially harmful to children under the age of six and the unborn children of pregnant women. That is because it is easily absorbed into their growing bodies and can disrupt the growth of the brain and other organs.

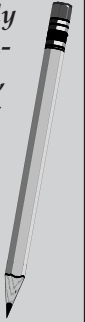
At very high levels of lead exposure, lead poisoning can cause mental retardation, coma, seizures, and even death. This

level of poisoning is now very rare in the United States.

Most children who get lead poisoning are poisoned through continual, low-level contact with lead. At low levels, lead can cause mental problems like lower intelligence, shorter attention spans, and reading and learning problems. It can also cause hearing loss, sleep problems, stunted growth, and other effects. At these low levels, a blood test is the only way to know if a child is poisoned.

The best way to prevent lead poisoning is to avoid contact with lead.

Many people think that you can get lead poisoning from pencil leads. But the "lead" in pencils is actually made of a soft mineral called graphite, not lead. So don't try to use lead poisoning as an excuse to get out of your writing assignments!

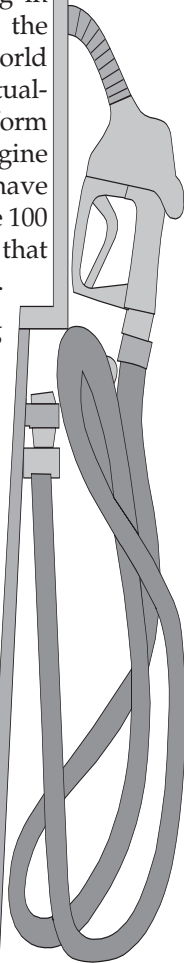


Unleaded, Please!

For a number of years beginning in the 1920s, most gasoline sold in the United States and around the world contained lead. Oil companies actually added lead to gasoline in the form of tetraethyl lead to prevent engine "knocking." Although people have known about lead poisoning since 100 B.C., many people did not believe that leaded gasoline could be harmful.

When a law aimed at reducing air pollution—the Clean Air Act—was passed in 1970, car manufacturers were required to make cleaner-burning engines. They discovered that the lead in leaded gasoline could gum up these new engines.

In 1976, the United States began phasing out leaded gasoline. Within four years, people's blood-lead levels dropped 37 percent. By 1991, blood-lead levels dropped by 78 percent, proving that leaded gasoline was once a major source of lead in people's bodies.



Preventing Lead Poisoning

Tap Water

Many people are exposed to lead through their tap water. Lead from lead water pipes or from lead solder that holds pipes together can dissolve in the water. Most of this lead comes from plumbing in the house, not from the public water supply.

Contact your local water authority to find out about having your water tested for lead. Testing is especially important for apartment dwellers in large buildings because "flushing" may not be effective in high-rise buildings with lead-soldered plumbing.

To avoid lead from tap water:

- Anytime the water in a faucet has not been used for six hours or longer, "flush" the cold-water pipes by running the water until it becomes as cold as it will get. This will clear out any water that may contain lead from sitting in the pipes.
- Use only water from the cold-water tap for drinking, cooking, and making infant formula. Hot water is likely to have higher levels of lead.

Lead-Based Paint

Older homes and buildings may have paint on the inside or outside that contains a high amount of lead. People used to put lead in paint to make it last longer. Young children can be poisoned by getting dust from lead-based paint into their mouths. If the paint is chipped or peeling, its dust can be scattered throughout the house or in the soil around the house. If children play in the soil or in a room that has paint dust, lead can get into their mouths when they eat, suck their thumbs, or take part in other normal activities.

To avoid lead from paint:

- Wash your hands after playing outside, before meals, and at bedtime.
- Eat a healthy diet that includes iron, calcium, and foods low in fat. Foods rich in iron include eggs, red meats, and beans. A healthy diet causes the body to absorb less lead.



Task Cards

Act 1

Purpose: To communicate the symptoms of lead poisoning

Imagine you are writing to a friend or family member about symptoms of lead poisoning just as Ben Franklin did in his letter. What examples would you give? How could you act out the symptoms? Although some of the symptoms may seem funny when they're acted out, how can you help the audience understand that they are serious?

Act 2

Purpose: To communicate how to prevent lead poisoning

Brainstorm a list of the most important things children and adults can do to prevent lead poisoning. How can you act out the things that people should and shouldn't do? You may need to exaggerate certain actions to get your points across.

Act 3

Purpose: To communicate ideas for how the problem of lead poisoning could be eliminated

Invent a situation in which people are working to eliminate the problem of lead poisoning altogether. How could you act this out?



Leadbusters Storyboard

Act # _____
 Purpose of this Act _____
 Group Members _____

Actions					
Diagrams					
Words/Sounds					
Props/Costumes					

