

Timeline

- 1839:** First comprehensive study of lead's neurotoxic effects published in France.
- 1904:** Australian physicians link childhood lead poisoning to paint.
- 1920s:** Twelve countries ban lead from interior paint.
- 1923:** First gallon of leaded gasoline sold in Dayton, Ohio.
- 1923 – 1924:** Fifteen workers die and hundred are hospitalized after exposure to tetraethyl lead at Standard Oil, DuPont, and GM plants.
- 1924:** Ethyl Corporation created by General Motors and Standard Oil to make and market tetraethyl lead as a gasoline additive.
- 1925:** After hearings and safety studies determine “no good grounds” not to sell it, a suspension of sales of tetraethyl lead is lifted, and it goes back on the market as a gasoline additive.
- 1943:** Researchers at Boston Children's Hospital publish first study showing poor school performance and other cognitive problems in previously lead-poisoned children.
- 1952:** Clair Patterson builds at Caltech the first ultraclean lab to combat lead contamination.
- 1953:** Patterson uses lead isotopes to determine the age of the Earth as 4.55 billion years.
- 1957:** Herb Needleman treats his first lead-poisoned patient at the Children's Hospital of Philadelphia.
- 1960:** Ethyl Medical Director Robert Kehoe sums up his research on lead, calling lead levels in the environment “natural” and levels below 80 micrograms per deciliter in people “harmless.”
- 1963:** Patterson publishes paper linking lead contamination in oceans to leaded gasoline. American Petroleum Institute cancels his funding.
- 1965:** Patterson argues in *Achieves of Environmental Health* that people are subjected to a “severe chronic lead insult,” and he estimates that Americans carry 100 times more lead in their bodies than did their preindustrial ancestors.

1965: Tri-City Study, produced by the federal government and industry, shows no increase in environmental lead levels.

Patterson begins studies in Greenland and Antarctica that will show environmental lead to have increased by 750 percent between 1750 and 1965.

1966: Senator Edmund Muskie's subcommittee hearings on air pollution specifically address concerns about lead.

1970: Needleman begins his first study of lead in teeth with Irving Shapiro in Philadelphia.

The U.S. Public Health Service establishes blood leads above 40 micrograms per deciliter as a "level of concern" for children.

Widespread screening of American children reveals that, in some cities, 25 percent of those tested have blood lead levels above 40 micrograms per deciliter.

The Environmental Protection Agency is formed. Passage of amendments to the Clean Air Act require the EPA to take action on lead.

1971: The National Academy of Sciences releases its first report on lead, which does not find a health risk from airborne lead.

Congress passes the Lead-Based Paint Poisoning Prevention Act. For the first time, lead paint is banned from federally funded housing.

1972: David Schoenbrod and the National Resources Defense Council sue the EPA for failure to act on lead in gasoline, and they win.

The EPA links lead in the air to blood levels in children and proposes reductions of lead in gasoline.

Jane Lin-Fu publishes an article in *New England Journal of Medicine* suggesting that childhood lead poisoning is far more common than thought.

1974: Schoenbrod and the Natural Resources Defense Council sue the EPA for failure to list lead as a criteria pollutant, and they win.

1975: First EPA ruling on lead takes effect: all new cars must have catalytic converters, which do not work with lead.

Average blood lead level in America is 15 micrograms per deciliter. The CDC lowers the pediatric level of concern to 30 micrograms per deciliter.

1976: After EPA wins legal battle with industry, reduction of lead in gasoline begins.

1978: First criteria document on lead is released. The EPA calls for an ambient air quality standard of 1.5 micrograms of lead per cubic meter.

Interior lead paint banned in the United States.

1979: Needleman publishes landmark study in *New England Journal of Medicine*. For the first time, there is strong evidence of the link between low-level lead exposure and cognitive impairment.

1980: National Academy of Sciences releases second report on lead. "Lead in the Human Environment," which includes Patterson's minority report.

1983: The EPA assigns a special committee to evaluate the conflicting work of Claire Ernhart and Herb Needleman.

1984: The EPA's Clean Air Science Advisory Committee endorses Needleman's work.

1985: The CDC lowers pediatric level of concern to 25 micrograms per deciliter.

1986: The EPA removes lead from gasoline.

The EPA's second criteria document on lead endorses Needleman's work and calls for stricter standards on lead.

1991: The CDC lowers the level of concern for lead to 10 micrograms per deciliter and calls for a plan to eliminate childhood lead poisoning by 2010.

1992: Needleman is accused of scientific misconduct in his 1979 study. He is found not guilty by the University of Pittsburgh's hearing board.

Prospective studies by Needleman and other researchers show cognitive effects from lead at lower levels than previously thought.

1993: Third National Academy of Sciences report on lead, "Measuring Lead Exposure in Infants, Children, and Other Sensitive Populations," released. Colleagues call it "Patterson's Revenge."

1994: Needleman is found not guilty of scientific misconduct by the federal Office of Research Integrity.

1995: Because of reduction of lead in environment, American average blood lead level falls to 2 micrograms per deciliter.

2000: Research published showing cognitive effects from lead below 10 micrograms per deciliter.

2006: Rhode Island jury finds three manufacturers of lead pigment – Sherwin-Williams, Lyondell, and NL Industries (formerly National Lead) – liable for the “public nuisance” of lead paint still present in the state’s public housing.

2007: Millions of toys recalled because they contain lead paint.

2008: Rhode Island Supreme Court overturns 2006 jury decision. Manufacturers of lead pigment do not have to pay for cleanup of lead paint.