

LEAD

IN DRINKING WATER

LEAD CAN ENTER DRINKING WATER WHEN SERVICE PIPES THAT CONTAIN LEAD CORRODE, ESPECIALLY WHERE THE WATER HAS HIGH ACIDITY OR LOW MINERAL CONTENT THAT CORRODES PIPES AND FIXTURES. THE MOST COMMON PROBLEM IS WITH BRASS OR CHROME-PLATED BRASS FAUCETS AND FIXTURES WITH LEAD SOLDER, FROM WHICH SIGNIFICANT AMOUNTS OF LEAD CAN ENTER INTO THE WATER, ESPECIALLY HOT WATER.



HEALTH EFFECTS OF EXPOSURES TO LEAD IN DRINKING WATER

THE SAFE DRINKING WATER ACT REQUIRES EPA TO DETERMINE THE LEVEL OF CONTAMINANTS IN DRINKING WATER AT WHICH NO ADVERSE HEALTH EFFECTS ARE LIKELY TO OCCUR WITH AN ADEQUATE MARGIN OF SAFETY. THESE NON-ENFORCEABLE HEALTH GOALS, BASED SOLELY ON POSSIBLE HEALTH RISKS, ARE CALLED MAXIMUM CONTAMINANT LEVEL GOALS (MCLGs). EPA HAS SET THE MAXIMUM CONTAMINANT LEVEL GOAL FOR LEAD IN DRINKING WATER AT ZERO BECAUSE LEAD IS A TOXIC METAL THAT CAN BE HARMFUL TO HUMAN HEALTH EVEN AT LOW EXPOSURE LEVELS. LEAD IS PERSISTENT, AND IT CAN BIOACCUMULATE IN THE BODY OVER TIME.

YOUNG CHILDREN, INFANTS, AND FETUSES ARE PARTICULARLY VULNERABLE TO LEAD BECAUSE THE PHYSICAL AND BEHAVIORAL EFFECTS OF LEAD OCCUR AT LOWER EXPOSURE LEVELS IN CHILDREN THAN IN ADULTS. A DOSE OF LEAD THAT WOULD HAVE LITTLE EFFECT ON AN ADULT CAN HAVE A SIGNIFICANT EFFECT ON A CHILD. IN CHILDREN, LOW LEVELS OF EXPOSURE HAVE BEEN LINKED TO DAMAGE TO THE CENTRAL AND PERIPHERAL NERVOUS SYSTEM, LEARNING DISABILITIES, SHORTER STATURE, IMPAIRED HEARING, AND IMPAIRED FORMATION AND FUNCTION OF BLOOD CELLS.

THE CENTERS FOR DISEASE CONTROL AND PREVENTION (CDC) RECOMMENDS THAT PUBLIC HEALTH ACTIONS BE INITIATED WHEN THE LEVEL OF LEAD IN A CHILDREN'S BLOOD IS 5 MICROGRAMS PER DECILITER ($\mu\text{g}/\text{dL}$) OR MORE. IT IS IMPORTANT TO RECOGNIZE ALL THE WAYS A CHILD CAN BE EXPOSED TO LEAD. CHILDREN ARE EXPOSED TO LEAD IN PAINT, DUST, SOIL, AIR, AND FOOD, AS WELL AS DRINKING WATER. IF THE LEVEL OF LEAD IN A CHILD'S BLOOD IS AT OR ABOVE THE CDC ACTION LEVEL OF 5 MICROGRAMS PER DECILITER, IT MAY BE DUE TO LEAD EXPOSURES FROM A COMBINATION OF SOURCES. EPA ESTIMATES THAT DRINKING WATER CAN MAKE UP 20 PERCENT OR MORE OF A PERSON'S TOTAL EXPOSURE TO LEAD. INFANTS WHO CONSUME MOSTLY MIXED FORMULA CAN RECEIVE 40 PERCENT TO 60 PERCENT OF THEIR EXPOSURE TO LEAD FROM DRINKING WATER.

EVEN LOW LEVELS OF LEAD IN THE BLOOD OF CHILDREN CAN RESULT IN: BEHAVIOR AND LEARNING PROBLEMS; LOWER IQ AND HYPERACTIVITY; SLOWED GROWTH; HEARING PROBLEMS AND ANEMIA.

LEAD CAN ACCUMULATE IN OUR BODIES OVER TIME, WHERE IT IS STORED IN BONES ALONG WITH CALCIUM. DURING PREGNANCY, LEAD IS RELEASED FROM BONES AS MATERNAL CALCIUM AND IS USED TO HELP FORM THE BONES OF THE FETUS. THIS IS PARTICULARLY TRUE IF A WOMAN DOES NOT HAVE ENOUGH DIETARY CALCIUM. LEAD CAN ALSO CROSS THE PLACENTAL BARRIER EXPOSING THE FETUS TO LEAD. THIS CAN RESULT IN SERIOUS EFFECTS TO THE MOTHER AND HER DEVELOPING FETUS, INCLUDING REDUCED GROWTH OF THE FETUS AND PREMATURE BIRTH.

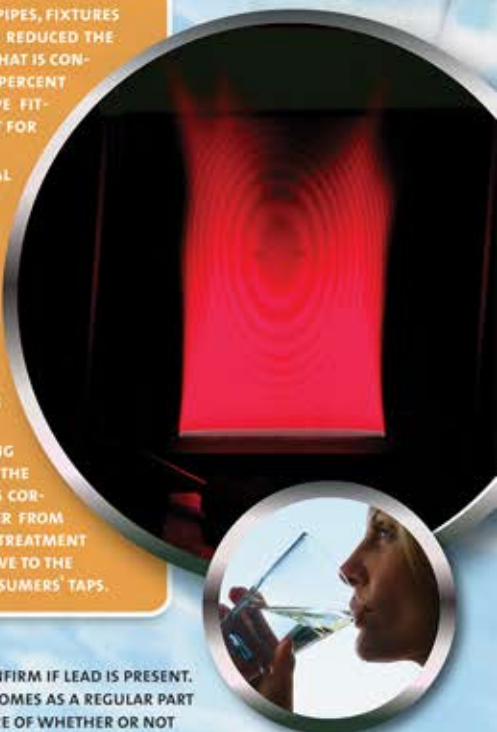
BATHING AND SHOWERING SHOULD BE SAFE FOR YOU AND YOUR CHILDREN, EVEN IF THE WATER CONTAINS LEAD OVER EPA'S ACTION LEVEL. HUMAN SKIN DOES NOT ABSORB LEAD IN WATER.

HOMES BUILT BEFORE 1986 ARE MORE LIKELY TO HAVE LEAD PIPES, FIXTURES AND SOLDER. THE SAFE DRINKING WATER ACT (SDWA) HAS REDUCED THE MAXIMUM ALLOWABLE LEAD CONTENT — THAT IS, CONTENT THAT IS CONSIDERED "LEAD-FREE" — TO BE A WEIGHTED AVERAGE OF 0.25 PERCENT CALCULATED ACROSS THE WETTED SURFACES OF PIPES, PIPE FITTINGS, PLUMBING FITTINGS, AND FIXTURES AND 0.2 PERCENT FOR SOLDER AND FLUX.

CORROSION IS A DISSOLVING OR WEARING AWAY OF METAL CAUSED BY A CHEMICAL REACTION BETWEEN WATER AND YOUR PLUMBING.

A NUMBER OF FACTORS ARE INVOLVED IN THE EXTENT TO WHICH LEAD ENTERS THE WATER, INCLUDING: THE CHEMISTRY OF THE WATER (ACIDITY AND ALKALINITY) AND THE TYPES AND AMOUNTS OF MINERALS IN THE WATER; THE AMOUNT OF LEAD IT COMES INTO CONTACT WITH THE TEMPERATURE OF THE WATER; THE AMOUNT OF WEAR IN THE PIPES; HOW LONG THE WATER STAYS IN PIPES; THE PRESENCE OF PROTECTIVE SCALES OR COATINGS INSIDE THE PLUMBING MATERIALS.

TO ADDRESS CORROSION OF LEAD AND COPPER INTO DRINKING WATER, EPA ISSUED THE LEAD AND COPPER RULE (LCR) UNDER THE AUTHORITY OF THE SDWA. ONE REQUIREMENT OF THE LCR IS CORROSION CONTROL TREATMENT TO PREVENT LEAD AND COPPER FROM CONTAMINATING DRINKING WATER. CORROSION CONTROL TREATMENT MEANS UTILITIES MUST MAKE DRINKING WATER LESS CORROSIVE TO THE MATERIALS IT COMES INTO CONTACT WITH ON ITS WAY TO CONSUMERS' TAPS.



WHY TEST YOUR HOME'S DRINKING WATER

TESTING YOUR HOME'S DRINKING WATER IS THE ONLY WAY TO CONFIRM IF LEAD IS PRESENT. MOST WATER SYSTEMS TEST FOR LEAD AT A CERTAIN NUMBER OF HOMES AS A REGULAR PART OF WATER MONITORING. THESE TESTS GIVE A SYSTEM-WIDE PICTURE OF WHETHER OR NOT CORROSION IS BEING CONTROLLED BUT DO NOT REFLECT CONDITIONS AT EACH HOME SERVED BY THAT WATER SYSTEM. SINCE EACH HOME HAS DIFFERENT PLUMBING PIPES AND MATERIALS, TEST RESULTS ARE LIKELY TO BE DIFFERENT FOR EACH HOME.

YOU MAY WANT TO TEST YOUR WATER IF YOUR HOME HAS LEAD PIPES (LEAD IS A DULL GRAY METAL THAT IS SOFT ENOUGH TO BE EASILY SCRATCHED WITH A HOUSE KEY) OR YOUR NON-PLASTIC PLUMBING WAS INSTALLED BEFORE 1986.



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