



ASARCO LLC Hayden Concentrator

2014 Annual Drinking Water Quality Report

ASARCO has prepared the following report to provide information to you, the consumer, on the quality of our drinking water. Included within this report are the general health information, water quality test results and water system contact.

The sources of drinking water; both tap and bottled water include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the earth or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material and can pick up substances resulting from the presence of animals or human activity.

Contaminants that may be present in source water include: microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife; inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming; pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses; organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff and septic systems; radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

ASARCO's Hayden Concentrator Water System's water source comes from ground water by way of nineteen wells located in the Hayden well field aquifer, and two wells located in the PZ Ranch aquifer.

Health Information:

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's safe drinking water hotline (1-800-426-4791) or visit their website at www.epa.gov/safewater.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune systems disorders, some elderly, and infants can be particularly at risk for infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbial contaminants are available from the Environmental Protection Agency's safe drinking water hotline (1-800-426-4791) or visit their website at www.epa.gov/safewater.

Nitrate in drinking water at levels great than 10 mg/L (10 ppm) is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause methemoglobinemia (also known as blue baby syndrome). Nitrate levels may rise quickly for short periods of time due to rainfall or agricultural activity. If you are caring for an infant, and detected nitrate levels are above 5 mg/L, you should consult your health care provider for advice.

If arsenic is less than or equal to 10 ppb (0.01 mg/L or 0.01 ppm), your drinking water meets EPA's drinking water standards. EPA's standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic, which is a naturally occurring mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that levels at your home may be higher than at other homes in the community as a result of material used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested. Flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from the EPA's Safe Drinking Water Hotline at 1-800-426-4791.

ASARCO's Hayden Concentrator Water System routinely monitors for contaminants in your drinking water according to Federal and State laws. The following table shows results for microbiological and disinfection by-products for the period of January 1, 2014 to December 31, 2014. Included in the table are the most recent results for inorganic compounds (IOCs), sodium, nitrates, and radio-chemicals. Testing was conducted on the water fountains as well as other cold water faucets found throughout the Hayden Concentrator site. Most recent results for volatile organic compounds and synthetic organic compounds fell below laboratory detection limit; therefore, results are not included in this report.

For more information regarding this report or concerns about the quality of your water system, please contact Lacretia Baum, Environmental Engineer at (520) 356-3275. ASARCO wants you, the consumer, to be informed about our water system.

Definitions and Terms:

90th Percentile -- the ninth highest reading (of ten samples), which is used to determine compliance with the Lead and Copper Rule

Action Level (AL) -- the concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water system must follow.

Colony Forming Units (CFU)/100 mL – a unit of measure for total coliforms and E. coli in drinking water.

Haloacetic Acids (HAA5) - formed as a byproduct when chlorine or bromine is used to disinfect water for drinking.

Maximum Contaminant Level (MCL) -- The "Maximum Allowed" is the highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLG's as feasible using the best available treatment technology.

Maximum Contaminant Level Goal (MCLG) – The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Residual Disinfection Level (MRDL) – The highest level of drinking water disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfection Level Goal (MRDLG) – The level of a disinfectant in drinking water below which there is no known or expected risk to health.

Milligrams per Liter (mg/L) – equivalent to parts per million (ppm).

Micrograms per Liter (µg/L) – equivalent to parts per billion (ppb).

Million Fibers per Liter (MFL) – a unit of measure for asbestos in drinking water.

Millirems per year (mrem/yr) -- measure of radiation absorbed by the body.

Nanograms per Liter – equivalent to parts per trillion (mg/L)

Picograms per Liter – equivalent to parts per quadrillion (ppq)

N/A -- Not Applicable, sampling was not completed by regulation or was not required.

Picocuries per liter (pCi/L) -- Picocuries per liter is a measure of radioactivity in water.

Treatment Technique (TT) -- A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

Total Trihalomethanes (TTHM) -- formed as a byproduct when chlorine or bromine is used to disinfect water for drinking.

2014 Detected Contaminants Report for the ASARCO Hayden Concentrator

| Water Quality Parameter | Violation? Yes or No | Highest Detected Levels | MCL | MCLG | Sample Year | Potential sources of Contamination |
|---|----------------------|-------------------------|--------|---------|--------------|--|
| Microbiological Contaminant | | | | | | |
| Total Coliform* (CFU/100 mL) | No | A (Absent) | 0 | 0 | Monthly 2014 | Coliforms are naturally present in the environment; as well as in feces. |
| Fecal coliform and E. Coli (CFU/100 mL) | N/A | N/A | 0 | 0 | N/A | Fecal coliforms and <i>E. coli</i> only come from human and animal fecal waste. |
| Nitrate | | | | | | |
| Nitrate (ppm) | No | 3 | 10 | 10 | 2014 | Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits. |
| Inorganic Chemicals (IOCs) | | | | | | |
| Antimony, Total (ppb) | No | <1.00 | 6 | 6 | 2013 | Discharge from smelters and refineries; solder; fire retardants; ceramics; electronics. |
| Arsenic (ppb) | No | 5 | 10 | 0 | 2013 | Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes. |
| Barium (ppm) | No | 0.049 | 2 | 2 | 2013 | Discharge of drilling wastes, discharge from metal refineries; erosion of natural deposits. |
| Chromium (total) (ppb) | No | 6.4 | 100 | 100 | 2013 | Discharge from steel and pulp mills, erosion of natural deposits. |
| Fluoride (ppm) | No | 1.8 | 4 | 4 | 2013 | Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories. |
| Sodium (ppm) | No MCL | 200 | No MCL | No MCLG | 2013 | Occurs naturally in soil, ground water and surface water. |

| Water Quality Parameter | Violation? Yes or No | Highest Detected Levels | MCL | MCLG | Sample Year | Potential sources of Contamination |
|--|----------------------|--|------------|--------------|-------------|---|
| Lead & Copper | | | | | | |
| Copper (ppm) | No | 90th percentile= 0.300 Highest detected = 1.02 | A.L. = 1.3 | A.L.G. = 1.3 | 2013 | Corrosion of household plumbing systems; Erosion of natural deposits. |
| Lead (ppb) | No | 90th percentile = < 4 Highest detected = < 4 | A.L. = 15 | 0 | 2013 | Corrosion of household plumbing systems; erosion of natural deposits. |
| Radionuclides** | | | | | | |
| Gross Alpha Emitters (pCi/L) | No | 6.6 ± 1.2 | 15 | 0 | 2013 | Erosion of natural deposits. |
| Combined Radium 226 & 228 (pCi/L) | No | <0.5 | 5 | 0 | 2013 | Erosion of natural deposits. |
| Combined Uranium 234/235/238 (pCi/L) | No | 0.00045 ± 0.00007 | 30 | 00 | 2006 | Erosion of natural deposits. |
| Disinfection and By-Products (DBPs) | | | | | | |
| Total Trihalo-methanes (TTHM) (ppb) | Yes *** | 87 | 80 | N/A | 2014 | By product of drinking water disinfection. |
| Haloacetic Acids (HAA5) (ppb) | No | 9.3 | 60 | N/A | 2014 | By product of drinking water disinfection. |
| Chlorine / Chloramines (ppm) | No | 0.55 | MRDL = 4.0 | MRDLG = 4.0 | 2014 | Water additive used to control microbes. |
| Bromate (ppb) | N/A | N/A | 10 | 0 | N/A | Chemical that is formed when ozone is used to disinfect drinking water that contains naturally occurring bromide found in source water. |
| Chlorite (ppm) | N/A | N/A | 1 | 0.8 | N/A | By product formed when chlorine dioxide is used to disinfect drinking water. |

*A system collecting fewer than 40 samples per month triggers an MCL violation if water system has greater than 1 routine-repeat sample per month which is total coliform-positive.

The new drinking water regulation being proposed by the Environmental Protection Agency (EPA) does not include a listing for ⁴⁰K but specifies that the Maximum Contamination Limit (MCL) for beta and photon emitters should correspond to a committed effective dose equivalent to 4-millirems/year from an annual **intake at the rate of two liters of drinking water per day. (A committed effective dose equivalent of 4-mrem/year means that the effective dose equivalent expected over the next 50 years following one year's intake should not exceed 4 mrem).

The ingestion dose conversion factor for ⁴⁰K is 2.29×10⁵ mrem/pCi. Thus, the concentration corresponding to the dose limit would then be:

$$\text{Concentration} = 4 \text{ mrem/yr} / (2 \text{ L/d} \times 365.25 \text{ d/yr} \times 2.29 \times 10^5 \text{ mrem/pCi}) = 239 \text{ pCi/L (i.e. 240 pCi/L)}.$$

***Chlorine injection rate was increased at the request of the Town of Hayden, which caused a TTHM exceedance. Chlorine injection rate was reduced to decrease the TTHM concentration levels. Subsequent samples have not exceeded the MCL.