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SOME TOXIC METALS AND CHEMICALS FOUND IN TAP WATER

(If you have questions, follow up with your pet's veterinarian)

METALS

ALUMINUM – Is everywhere within our environment, including the air we breathe. Aluminum is also found in many vaccines, antiperspirants, soft drink cans, foil, cookware, over-the-counter drugs (like antacids, anti-diarrheals, pain relievers which can be found in tap water), baking powder, refined foods, processed cheeses, and other products. Aluminum sulfate is added to tap water in water treatment plants.

PETS - It is in pet foods, water, vaccines, and food bowls. Too much aluminum can cause an animal to have extra itchy skin, loose stools, and a myriad of medical problems.

HUMANS - It has been linked to health problems such as decreased liver and kidney function, forgetfulness, speech disturbances, inflammation, headaches, confusion, muscle weakness, bone pain, deformities, fractures, seizures, speech problems and slow growth of children.

ARSENIC – Is a natural element in soil, rocks and groundwater in many countries including the United States, Canada, China, and Brazil. When combined with other elements, arsenic can be used to preserve wood and kill insects. Arsenic can make its way into the water supply from natural earth deposits or industrial pollution or from farming methods using pesticides and fertilizers. It is found in antibiotics fed to conventionally raised chickens. To minimize arsenic, eat organic pastured-raised eggs and chicken. Rice and tobacco take up arsenic from the soil more than most other plants do.

HUMANS: Arsenic poisoning can cause stomachaches, headaches, drowsiness, abdominal pain, diarrhea, vomiting, muscle cramps, numbness and tingling of extremities (hands and/or feet), skin changes, diabetes, heart and lung disease, kidney disease, confusion, developmental defects, decreased memory, dementia, diverse pregnancy outcomes, bladder, and lung cancer. You can read more at the World Health Organization website, www.who.int. Bloodwork does not test for arsenic. Hair analysis for heavy metals may detect previous exposure.

TIN – Tin is a natural element in the earth's crust. It is a soft, white, silvery metal that does not dissolve in water. It is present in brass, bronze, pewter, and some soldering materials. It is used to line cans for food, beverages, and aerosols. This is used in toothpaste, perfumes, soaps, food additives and dyes. It is used to make plastics, food packages, plastic pipes, pesticides, paints, and pest repellents. Metallic tin, and inorganic and organic tin compounds can be found in the air, water, and soil near places where they are naturally present in the rocks, or where they are mined or used in manufacturing.

If large amounts are swallowed by either pets or humans some of the effects can be stomachaches, anemia, liver, and kidney problems.

Thallium – is a bluish -white metal that is found within the earth's crust. Thallium is added to gasoline to reduce knocking and improve engine performance. Lead was removed from gasoline and thallium was added

instead. It is used in electronic devices and switches.

PETS: Very hard to diagnose.

HUMAN: High levels of Thallium can affect the nervous system, lung, heart, liver, and kidney.

MANGANESE – This mineral is an essential nutrient for humans and animals that occurs naturally in the air, soil, and water.

Commonly, it is found in pesticides and as a fuel additive in some gasolines. It can be found in several food items, including grains, cereals, and teas.

If too many manganese supplements are taken either by pet or human, side effects include loss of appetite and slowed growth.

LEAD – Lead is usually found in tap water due to lead solder in plumbing and corroded town water supply pipes. It can be found in old paint. In 1996 new guidelines were created for home developers to encourage safer drinking water and 1978 new guidelines to eliminate lead in paints.

It can also be found in soil, ground water, glass, rubber products, gasoline, car exhaust fumes, canned food, hair dyes and newspaper print.

PETS: High levels of lead in animals can affect the central nervous system: appear dull, unresponsive, walk aimlessly. In other cases, you can have muscle twitching, paralysis of the tongue, circling and stargazing. Typically, bloodwork can detect lead levels.

*The CDC has updated its recommendations for children's blood lead levels stating there is no level of lead that is acceptable for children. To learn more about the CDC's updated recommendations on blood lead levels, please visit: http://www.cdc.gov/nceh/lead/ACCLPP/blood_lead_levels.htm.

Some lead poisoning signs and symptoms in newborns, children, and adults: Newborns: can be born prematurely, have lower birth weight or have slowed growth rates. Children: developmental delay, learning difficulties, and irritability. Adults: high blood pressure, joint and muscle pain, and difficulties with memory or concentration.

<https://www.mayoclinic.org/diseases-conditions/lead-poisoning/symptoms-causes/syc-20354717> (click on the link for further information on symptoms)

CHROMIUM – You can find chromium naturally in rocks, plants, soil, volcanic dust, industrial pollution, and gases. The EPA does recommend a limit for chromium in drinking water.

Researchers have found that high amounts of chromium can lead to severe health effects such as cancer, reproductive harm and damage to the liver and kidneys in both pets and humans.

COPPER – Copper is an element that occurs naturally in plants, water, air, and soil. Mostly used to make wiring, sheet metal and plumbing materials. All living organisms (plants, animals, and humans), need a trace amount and it can be absorbed from foods, drinking, and breathing. It has been commonly used in agriculture to treat plant disease (mildew), and in water treatment and as a preservative for woods, leathers, and fabrics.

PETS: Can cause liver damage from too much copper. This can be diagnosed by a liver analysis by your animal's veterinarian.

HUMAN: People who have copper toxicity develop nausea and vomiting but other symptoms can include diarrhea, muscular weakness, and pain/burning sensation in the abdominal area.

<https://www.webmd.com/diet/what-to-know-copper-toxicity> (to read more)

CHEMICALS

CHLORINE – Is added to tap water to kill bad germs such as Salmonella (<https://www.cdc.gov/salmonella/>), Campylobacter (<https://www.cdc.gov/campylobacter/>), and Norovirus (<https://www.cdc.gov/norovirus/>). Unfiltered water can expose you to dangerous chlorine vapors and chloroform gas. These gases can evaporate into the air from toilet bowls, washing your clothes or dishes or taking a hot shower or bath. One suggestion is to open windows on opposing sides of your home to cross ventilate; keeping them open 5-10 minutes a day can help remove these gases.

Chlorine poisoning can occur when you touch, swallow, or inhale chlorine. Respiratory symptoms include [coughing](#), and [difficulty breathing](#). Digestive symptoms could include burning in the mouth, swelling of the throat, and/or throat pain.

<https://www.healthline.com/health/chlorine-poisoning> (click on the link for further information on symptoms)

CHLORAMINES – Chlorine binds with organic material in water and forms chloramine. Research has shown it to be more toxic than chlorine. It is one of the major disinfectants used in public water systems (along with Chlorine). Vegetables may be treated with chlorine or chloramine to delay spoilage.

Chloramine fumes can cause an individual to become congested with sneezing, sinus congestion, coughing, choking, wheezing, shortness of breath and asthma. These problems are most commonly encountered after swimming in pools containing excess chloramines.

<https://www.cdc.gov> (click on the link for further information on symptoms)

TRIHALOMETHANES (THMs)/ DISINFECTION BYPRODUCTS (DBPs) – Toxic DBPs and THMs form when disinfectants encounter natural organic matter (for example like decaying vegetation). It is colorless and will evaporate out of the water into the air. These byproducts are more toxic than chlorine. DBPs may weaken the immune system, disrupt the central nervous system, damage the cardiovascular system, or the renal system, or cause respiratory problems.

DBPs can cause severe bladder damage leading to cancer. Water infected with DBPs increased the risk of cancer when exposed for a prolonged time through absorption into skin, inhalation, and ingestion. THMs high exposure amounts may also cause reproductive problems and birth defects.

https://www.cdc.gov/biomonitoring/THM-DBP_BiomonitoringSummary.html (click on the link for further information on symptoms).

FLUORIDE – One of the most harmful neurotoxins in tap water is fluoride. It harms anyone, even low doses have been shown to decrease thyroid function, delay childhood brain development, and lower the IQ in children. You can read more in [The Fluoride Deception](#) by Christopher Bryson.

Fluoride builds up in the tissues. High levels of fluoride can result in tooth and bone damage. Fluoride compounds can be used in making steel, chemicals, ceramics, lubricants, dyes, plastics, and pesticides.

Go to the agency for Toxic Substances and Disease Registry www.atsdr.cdc.gov to read more.

GLYPHOSATE – Is an active ingredient in weed killer products. The most well-known product is Roundup. Roundup is used in farming, in home gardens and on lawns worldwide.

If swallowed in large amounts, it can cause nausea and vomiting and if left on the skin can cause irritation. Studies in animals show developmental effects in fetuses, such as lower body weight and problems with bones and organ growth. Any symptoms of illness or chronic disease can be caused by the build-up of glyphosate in the tissues.

Go to the agency for Toxic Substances and Disease Registry www.atsdr.cdc.gov to read more.

POLYFLUOROALKYL SUBSTANCE (PFAS)-Fluorinated carboxylic acid (PFOA) and Fluorooctanesulfonic acid (PFOS). They can be found in commonly used items such as non-stick cookware, pizza boxes and stain repellants. It is found in drinking water especially if near landfills and wastewater treatment plants.

Large amounts of PFAS can increase cholesterol levels, can change liver enzymes and depress the immune system. Birds can die if exposed to the air when the owners cook with non-stick pans.

<https://www.atsdr.cdc.gov/pfas/health-effects/index.html> (To read more)

Resources:

Website: www.briabsinc.com/the-top-5-heavy-metals

Common Sources of Toxicity 2006 Dr. Freddie Ulan (Office material)

Website: www.atsdr.cdc.gov Agency for Toxic Substances and Disease Registry (has a lot of information regarding Toxins)

To learn more about CDC's updated recommendations on children's blood lead levels, please visit:

http://www.cdc.gov/nceh/lead/ACCLPP/blood_lead_levels.htm.

https://www.cdc.gov/healthywater/drinking/public/water_disinfection.html (chloramines)

<https://www.cdc.gov/TSP/substances/ToxSubstance.aspx?toxid=17> (a list of Toxicants with explanation.

https://www.cdc.gov/habs/pdf/cyanobacteria_faq.pdf (to read more on Cyanobacteria)

<https://www.cdc.gov/legionella/about/causes-transmission.html> (to read more on Bacterium Legionella)

<https://www.epa.gov/sdwa/chromium-drinking-water> (more on chromium-66)

<https://pubmed.ncbi.nlm.nih.gov/24202562/> (metals affecting animals)

<https://vcahospitals.com/know-your-pet/arsenic-poisoning-in-dogs> (arsenic poisoning)

<https://www.merckvetmanual.com/toxicology/lead-poisoning/lead-poisoning-in-animals> (read more on metal poisoning for animals)