Additionally, ptaquiloside has been found as an environmental contaminant in soil and water, and air-borne spores may also present a risk of human exposure. Human exposure through any means should be of concern, because ptaquiloside is a proven carcinogen.

2. OXALATE

Oxalic acid is a naturally occurring chemical in plants and animals and is also consumed in a variety of different foods such as leafy greens, nuts, seeds, most berries, certain fruits, soy and soy products, meat and dairy products. In large amounts, oxalic acid is poisonous, but toxic levels are not found in foods that we normally eat. Many foods contain oxalic acid, especially leafy greens such as spinach, kale, chard, parsley, collards and beet greens. Spinach has the highest levels of oxalic acid – 750 milligrams per 100 gram serving.

Oxalates (the salt form of oxalic acid) are extremely painful when deposited in the body. About eighty percent of kidney stones are caused by oxalates and they are by far the most common factor in kidney stone formation. There is also a large degree of genetic variability in the ability to detoxify the chemicals that produce oxalates. Perhaps twenty percent of the population has a genetic variance that increases their likelihood of producing oxalates, even when not consuming a high-oxalate diet.

Oxalates can form all throughout the kidney and the urinary tract, and can also form in the ureter as well as in the bladder. These star-shaped crystalline stones cause pain as the pressure in the urinary filtrate builds up, and perhaps also by tearing into the walls of the urinary tract itself. Oxalate, aka oxalic acid, is a naturally-occurring and reactive molecular substance found in a variety of foods, especially if the food is related to plants. That can include all seeds and nuts, most greens, many fruits, even chocolate, the Vitamin C we supplement with, or the fructose in the fruits we eat, can convert to oxalate. When high oxalate foods are combined with calcium-rich foods or supplements, you then create oxalate crystals. Picture razor-sharp, jagged edges and you have oxalate crystals, which can cause a lot of pain as they are eliminated via your stools. These nasty crystals can also form in your lungs, or your kidneys, or your joints and bones, or blood vessels, and even your brain. And any of the latter can results in inflammation.

If oxalates combine with iron, you then have oxidative damage, plus your iron levels will go down. There is some suspicion that excess oxalates can negatively affect your thyroid.

If the body is not getting rid of the oxalates being over-consumed in foods…these powerful and very reactive molecules can cause a lot of problems. And here are some of the symptoms of excess oxalates:

- painful or inflamed joints, similar to fibromyalgia or arthritis
- burning urine or bowel movements
- vulvodynia – external female genital pain or irritation
- depression
- leaky gut or all sorts of other gut problems
- kidney stones i.e. oxalates combine with calcium to form these
- developmental disorders in children, including autism
- hives (rarer than the above, but what happened to me with huge massive ones)
- chelating of toxic metals like mercury
Consumption of ethylene glycol is also nephrotoxic from metabolism to oxalic acid, which chelates Ca2+ and precipitates in tubules as calcium oxalate. The mainstay of medical treatment of patients with ethanol toxicity is supportive care. Many modalities for treating ethanol intoxication and enhancing ethanol clearance have been attempted. In general, a conservative approach is recommended. Hypoglycemia and respiratory depression are the 2 most immediate life-threatening complications that result from ethanol intoxication:

**Initial care**
- Assess the airway. If necessary, secure the airway with an endotracheal (ET) tube if the patient is not maintaining good ventilation or if a significant risk of aspiration is observed. Provide respiratory support and mechanical ventilation if needed.
- Obtain intravenous (IV) access and replace any fluid deficit or use a maintenance fluid infusion. Use plasma expanders and vasopressors to treat hypotension, if present.
- Ensure that the patient maintains a normal body temperature.
- Quickly correct hypoglycemia. In children, 2-4 mL/kg of 25% dextrose solution is usually administered. A maintenance infusion of dextrose-containing IV fluids is often required.
- If the ingestion occurred within 1 hour of presentation, placing a nasogastric tube and evacuating the stomach contents can be helpful.
- In patients with chronic ethanol abuse, administer thiamine 100 mg IV/intramuscularly (IM) to prevent neurologic injury.
- Additional care: If other substances have been co-ingested, initiate specific treatment for those substances, if available. For instance, naloxone can be used to reverse respiratory depression if opiate co-ingestion is suspected.

**Other treatments**
- The administration of medications to cause emesis is not recommended because of the rapid onset of CNS depression and risk of aspiration.
- The administration of activated charcoal is not recommended for isolated alcohol ingestions because it does not bind hydrocarbons or alcohols. If the clinician suspects a concomitant ingestion of other toxic products, activated charcoal may be effective in absorbing these toxins.
- The effects of insulin, glucose, caffeine, and several other medications have been studied, but none consistently increases ethanol metabolism or alleviate CNS depression.
- Glucose administration is important in patients who are hypoglycemic as a result of ethanol intoxication; however, this treatment does not clear ethanol from the blood.
- Fructose infusion can increase the ethanol clearance by 25%. However, the use of fructose is not recommended because significant adverse effects may occur. For instance, fructose infusion can cause lactic acidosis, severe osmotic diuresis, and GI symptoms; therefore, it is not routinely used in the treatment of ethanol intoxication.
- Hemodialysis efficiently clears ethanol from the blood but is an invasive procedure; thus, its use is not routinely recommended. Hemodialysis can be used in patients whose clinical condition is deteriorating or in patients whose CNS depression, respiratory depression, or hypotension is refractory to standard therapy.
- Patients who have impaired hepatic function may require dialysis to clear an ethanol load.

IV). INDUSTRIAL TOXIN