

Struvite Uroliths FAQ

What are uroliths?

Uroliths, more commonly called “bladder stones”, are solid objects that form in the urinary bladder. Uroliths can form due to a variety of reasons and can be composed of several different substances. Uroliths can cause bladder irritation, urinary tract infections, and in some instances can lead to obstruction of the urinary tract.

How are struvite uroliths formed?

Struvite uroliths are composed of ammonium, magnesium, and phosphate. In dogs, struvite crystals always form secondary to a urinary tract infection. Cats can have struvite crystals form with or without a urinary tract infection. Some bacteria can break the waste product urea into two ammonium ions, which causes the urine to become alkaline. Alkaline, concentrated urine will predispose struvite crystals to bind together and form “stones”. Crystals deposit themselves around the stone in layers, which can trap bacteria as the urolith grows.

The pets most predisposed to struvite uroliths are female dogs of smaller breeds such as miniature schnauzers, shih tzus, and Yorkshire terriers. Younger dogs are also more likely to develop struvite uroliths. Male cats are more likely to develop struvite crystals.

How do you treat uroliths?

Since struvite uroliths are formed due to a urinary tract infection in dogs, the mainstay treatment is treating the urinary tract infection. Struvite uroliths can be dissolved through diet, which will be discussed later in this handout. Since this is a non-invasive treatment, dissolution through diet is the preferred treatment for struvite uroliths. It is important to continue antibiotic treatment throughout the dissolution process, as bacteria can be leached from the layers of uroliths as they dissolve. Antibiotic therapy can be stopped once there is no evidence of uroliths on imaging and there is a negative urine culture. **Once struvite uroliths have been dissolved, it is no longer necessary to feed a urinary diet as long as the dog is monitored for urinary tract infections.**

If there are numerous uroliths, or if the uroliths are very large, they can be removed surgically. In some cases, the uroliths can be removed through a urinary scope or catheter.

What is a urinary diet and how do they work?

A urinary diet is a diet specifically formulated to dissolve struvite uroliths and prevent future crystal formation. There are several companies that manufacture urinary diets. It is important to note that each company formulates their diets differently, and diets from different companies are not interchangeable (only one manufacturer should be fed at one time). All urinary diets are prescription diets because they are intended to be fed under the supervision of a veterinarian. Over-the-counter urinary diets are not appropriate to dissolve uroliths or prevent urinary crystals.

Urinary diets are carefully formulated to have lower levels of the building blocks of urinary stones, such as magnesium and calcium. These diets are also carefully buffered to keep the urine at a neutral pH, which decreases the chances of urinary crystals forming.

Home cooked diet formulations are not recommended for pets that have chronic uroliths. This is because it is impossible to assure a home prepared diet will buffer the urine appropriately. Unbalanced home cooked diets can predispose animals to uroliths.

How to feed a urinary diet.

The most important aspects to preventing uroliths are maintaining dilute urine and a neutral urine pH. To dilute the urine, it is typically recommended to feed a canned diet. This is because canned diets contain more moisture. If a dry diet is being fed, water can be added to the kibble to increase water intake. To encourage cats to drink water you can offer water in multiple places around the house or invest in a water fountain.

It is imperative that pets being fed urinary diets to dissolve or prevent uroliths only be fed the prescribed diet. Any additional treats, table scraps, or over-the-counter foods can change the pH of the urine and negate the effect of the urinary diets. Prescription urinary treats can be fed as long as they are from the same manufacturer as the diet.