

## Calcium Oxalate 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 calcium oxalate uroliths formed?**

Calcium oxalate uroliths are composed of calcium ions and oxalates. Oxalates are urinary wastes from vitamin C metabolism. In dogs and cats, it is more common to have a high concentration of calcium in the urine, rather than a high level of oxalates. Unfortunately, when calcium binds to oxalates, it is irreversible. Calcium oxalate uroliths tend to form in highly concentrated acidic urine. These uroliths cannot be dissolved with diet.

Calcium oxalates are most common in male, middle-aged, small breed dogs such as miniature schnauzers, miniature poodles, and shih tzus. Dogs with diseases that increase calcium excretion in the urine, such as hyperadrenocorticism (Cushing’s), parathyroid disease, or some neoplasias can predispose calcium oxalate uroliths. Feeding high levels of calcium or vitamin D can also cause calcium oxalate crystals to form. Overweight male cats also develop calcium oxalate uroliths, with Burmese and Himalayan breeds predisposed.

### **How do you treat calcium oxalate uroliths?**

As calcium oxalate uroliths cannot be dissolved, it is necessary to remove the stones surgically. In some cases, the uroliths can be removed through a urinary scope or catheter. Once the uroliths have been removed, it is recommended to feed a prescription urinary diet to prevent further crystal formation.

Dogs with other medical conditions can be fed non-urinary prescription diets that have been formulated to prevent crystals (S/O Index, St/Ox Shield, or StOx Defence diets).

### **What is a urinary diet and how do they work?**

A urinary diet is a diet specifically formulated to 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 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.