

## Frequently Asked Questions Controlling Algae and Slime in Irrigation Lines and Systems

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### **Injection of Selectroicide into Irrigation Systems**

#### **Can I use my existing fertilizer injector to inject Selectroicide?**

This depends on how your irrigation system is designed. Research results clearly show that injecting Selectroicide as close to the water source as possible provides the best results. Most centralized fertilizer injectors will inject fertilizer into half of the irrigation system. If clear water lines are present, they are not downstream from the fertilizer injector. Therefore, in order to treat every drop of water in the irrigation system, a new installation dedicated to Selectroicide injection will deliver the best results.

#### **Why is a special injector required for the shock treatment?**

The maximum-labeled stock concentration is 500 ppm. In order to shock the irrigation system with 50 ppm, an injection ratio of 1:10 is required. Most fertilizer injectors operate in the 1:100 – 1:200 range making them incapable of injecting enough stock solution for the shock treatment. These common injectors are, however, capable of injecting the continuous dose throughout the year. A future label for Selectroicide may allow for a higher stock concentration, which will make common injector ratios adequate for shock treatment. Until that time, a 1:10 ratio will be required.

#### **Why is it necessary to install a new injector for Selectroicide?**

It's not so much a matter of not being able to use an existing injector, but rather the location of the injector in the irrigation system. Most existing injectors are used to inject fertilizer and only catch half of the irrigation lines, as clear water lines do not receive fertilizer. If we use such a fertilizer injector for Selectroicide, only half of the irrigation system will be treated. We believe this will produce less than desirable results and recommend that an injector be installed in a location that will treat every drop of water on the range.

#### **If I already have an injector installed to inject acid into every drop of water on my range, can I also use this injector for Selectroicide?**

Certainly, provided the injector is capable of injecting two chemicals at different injection rates. This will require separate stock tanks, as the stock solutions should not be combined. Also, we recommend injecting Selectroicide after the acid. Depending on how much acid is being injected, it may be necessary to have it well blended in the water stream before the chlorine dioxide is introduced.



### **What happens if my stock tank runs out of Selectrocide and injection is interrupted?**

Running out for a day or two shouldn't create a problem. Try to keep these instances to no more than a day or two. Don't allow the system to run for a week or more between batches as this may allow algae and bioslime to get a foothold and start growing in the system. And do NOT increase the amount injected in an attempt to 'catch up' after running out of stock.

## **Handling Stock Solution**

### **I sometimes notice a cloud of fumes hanging over the surface of the stock solution. Is it dangerous?**

Chlorine dioxide is denser than air and tends to hover over the solution. It does not rise and spread quickly, although it will move readily in a greenhouse ventilation air stream. The concentration of gas can cause respiratory irritation. Use of a respirator while handling the stock solution will eliminate the chance of inhaling fumes and experiencing such irritation.

### **Why is it advised NOT to allow the injector to operate while Selectrocide is being generated?**

This is because chlorine dioxide is dense and will settle initially in the stock tank as it's being generated overnight. At the end of the twelve-hour generation period the concentration at the bottom of the tank may be higher than 500 ppm. If the injector is allowed to operate during this generation period, before the solution can be mixed, a higher than desired concentration could be injected into the system. Many find it more convenient to generate the solution in a five-gallon bucket and then transfer it to the stock tank and dilute it to achieve the desired concentration. This eliminates any concern over whether the injector is operating or not.

## **Irrigation System Treatment**

### **How important is the twice-a-year shock treatment?**

It is very important initially. The 50 ppm concentration of Selectrocide penetrates bioslime lining the inside of the irrigation lines and kills it quickly. Depending on how contaminated the lines are after years of growth, treating with only the 0.25 ppm continuous dose will not yield immediate results. We believe that after following the shock treatment strategy for a year or two it may be possible to reduce the frequency to only once per year, as the old bioslime is removed. It may even be possible to eventually eliminate the shock treatment all together depending on how successful the continuous dose strategy works.

### **What can I expect to flush out of my irrigation lines as the bioslime and algae are killed?**

This will depend on how contaminated the lines are at the time of treatment. Bioslime and algae contain organic and inorganic materials, as they are killed and lose their connection to the walls of the pipes, they will slough off and be carried through the line in the flow of water. These materials will be noticed as soon as the day after treatment and may continue for days or weeks. This will require regular inspection and cleaning of filters located anywhere in the system. If proper filtration is not built into the system, special care will be needed to flush the system in a thoughtful manner to avoid sending these particles through drip tubes,



mist nozzles, etc. Remember that the goal of this treatment is to remove the bioslime and algae in the system that has been contaminating the water supply and causing crop loss.

### **The ultra-low range test strips are difficult to read. What should I look for?**

To achieve 0.25 ppm residual Selectrocide in the water supply, the ultra-low range test strip will show the faintest tint of pink. With practice you'll learn to trust the strips, but in the beginning, just look for the strip to show a faint pink. It's easy to determine that the concentration is higher than 0.25 ppm - the pink color will be darker. Refer to color blocks on the test strip vial for added help. Keep in mind that the residual, after sitting idle overnight, will likely be drawn down to zero, or at least show as undetectable on the test strip. Organisms in the water consume the chlorine dioxide sitting in the lines overnight. Don't be alarmed if you don't detect Selectrocide immediately. In the time that it takes for fresh solution to be injected and travel from the injector to the production area, you'll detect fresh solution. In time, you'll become comfortable with the morning lag time to recharge the system.

## **Crop Contact**

### **Is Selectrocide phytotoxic to plants?**

Yes, at higher than recommended concentrations chlorine dioxide can cause phytotoxicity. As with any pesticide or growth regulating product, too much of a good thing can become bad. Research to date has shown that phytotoxicity may occur at concentrations above 20 ppm. This is the reason we do not want the shock treatment solution that is flushed from the irrigation lines to be used to irrigate crops. The continuous dose of only 0.25 ppm is safe and well below any level that will cause phytotoxicity. It is also known that chlorine dioxide is more aggressive in the gaseous state, compared to a liquid solution. Handling the stock solution must be done in a well-ventilated area to avoid respiratory irritation. If plants are in the vicinity of the injector and stock tank, make sure fumes are exhausted via ventilation to avoid any phytotoxicity in the form of leaf necrosis.

## **About Selectrocide and Chlorine Dioxide**

### **What is Selectrocide?**

Selectrocide is greater than 99% pure solution of chlorine dioxide in water. When the user places the patented micro-reactor sachet in water, the sachet generates on-site a specific amount of chlorine dioxide. It is not an acidified sodium chlorite solution; the generator utilizes patented membrane technology to generate a chlorine dioxide solution free of unwanted residuals. Selectrocide is EPA-registered as a sanitizer, fungicide, algaecide, disinfectant, tuberculocide, slimicide, virucide and deodorizer.

### **Why use Selectrocide over alternative treatments?**

Because it is more selective to key organics, Selectrocide is more efficacious at lower parts-per-million (ppm). Therefore, it is more effective and less corrosive than other decontamination agents.<sup>1</sup> In addition, since Selectrocide is a gas in water, it rinses quickly from lines and tanks leaving no residue, typically with less than one volume of rinse water.

1. At typical use concentrations, Selectrocide does not have detrimental effects on most materials excluding some elastomers. Compatibility of specific materials should be tested prior to extended contact.



## **Has chlorine dioxide been used before?**

Chlorine dioxide has been recognized as an effective biocide for decades, and is used in a range of hygiene-related applications worldwide. Municipal water systems have used chlorine dioxide to treat drinking water for over 50 years.

## **Why couldn't I use chlorine dioxide before?**

Introduced in 2000, Selectrocide is produced from patented technology that generates on-site greater than 99% pure chlorine dioxide. Prior to Selectrocide, expensive mechanical generators or relatively impure "stabilized" solutions were the only ways to make chlorine dioxide. The expense of capital equipment and the corrosiveness of the lower quality solutions prohibited the development of many point-of-use applications.

## **How is chlorine dioxide different than chlorine?**

Chlorine dioxide is not chlorine and does not act like chlorine. Hypochlorous acid (the active chlorine ingredient in bleach), like most other chlorine species, oxidizes by chlorination, by which a chlorine atom is added to a substance. This creates toxic and carcinogenic compounds such as THMs and HAA5s (trihalomethanes and haloacetic acids). Chlorine dioxide performs oxidation in such a manner that no chlorine atoms are transferred to form toxic or carcinogenic compounds. Instead the chlorine atoms are reduced into harmless chlorides.

## **What is the shelf life of Selectrocide?**

In the original unopened package, Selectrocide has a shelf life of two years. Once the product is activated, use Selectrocide solution within 15 days. Store activated solution according to instructions on label (cool place, out of direct sunlight, apart from food).

## **Will Selectrocide damage my equipment?**

No. Compatibility testing at 5 ppm and 100 ppm has demonstrated that Selectrocide is compatible with most metals and plastics and should not damage operative equipment or water lines.<sup>2</sup> More information regarding compatibility can be found at [www.selectivemicro.com](http://www.selectivemicro.com).

## **Is there a test for concentration of Selectrocide?**

Chlorine dioxide is easily detectable. For quick on-site verification, Selective Micro<sup>®</sup> offers test strips that quickly and accurately detect concentration.

Rev 3-05B

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