



we understand

# CRYPTO HAPPENS

Pulsar CRS™ System removes 99% of *Cryptosporidium*.

Pulsar CRS™ System is a water clarifier and coagulant built and designed to improve the removal of crypto in sand filters.

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## The **Pulsar CRS™** System adds a layer of protection to your current risk management system.

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**Pulsar CRS™** Clarifier is a cationic polymer that when applied in small doses over a long period of time, and immediately after a backwash cycle, can improve filter efficacy on a sand bed from an average of 30-40 micron down to 2 microns<sup>1</sup>. This effectively traps up to 99% of cryptosporidium on the sand bed surface, clarifying the water to improve overall pool water quality.

Here's how it works:

**01**

Install **Pulsar CRS™** software and hardware package available from your distributor.

100%  
**INSTALLATION COMPLETE!**

**02**

Program the control panel specific to your pool size.

**POOL SIZE REGISTERED AND CONFIRMED!**

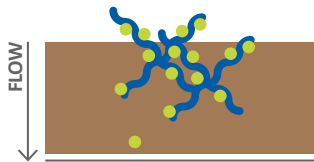
**03**

The control panel will then automatically sense a backwash event and begin the **Pulsar CRS™** feed cycle when backwashing is complete providing a new layer of protection and clarifying the water.

**MAINTENANCE ROUTINE ACTIVATED!**

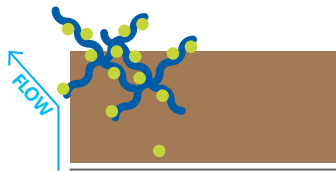
**04**

During sand filtering, the **Pulsar CRS™** System **traps and binds Crypto oocysts**.



**05**

During backwash, the **trapped and bound Crypto oocysts** are **taken out of the water/filter** and into the sewage system.



**06**

When used along with an appropriate risk management system, your water will be sufficiently remediated to be enjoyed by guests!

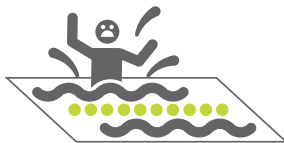


### What happens if there is an **Accidental Fecal Release (AFR)** or **CODE BROWN** in the pool?

The **Pulsar CRS™** control panel is programmed with a **CODE BROWN** feature that allows the operator to add additional product during the remediation of an AFR/Code Brown offering further protection for your facility and the bather.

**01**

The water has become **contaminated with Crypto oocysts**, therefore requiring treatment with the **Pulsar CRS™** System.



**02**

By hitting the **CODE BROWN** button on the control panel, additional amounts of **Pulsar CRS™** Clarifier are added. Use with **Pulsar® Power Shock** as part of your complete risk management system.

**INITIATE CODE BROWN!**

<sup>1</sup>Amburgey, James, et al., (2012). "Are Swimming Pool Filters Really Removing *Cryptosporidium*?"



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## Have questions about the **Pulsar CRS™** System? **We've got answers.**

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### What is the Pulsar CRS™ System?

A simple, low cost method to provide bathers with an added layer of protection against one of the most dangerous pathogens found in today's recreational water, *Cryptosporidium*. Utilizing the **Pulsar®** Feeder's control panel, **Pulsar CRS™** System is a simple and convenient system. Operators simply monitor the product level and replace as needed. As an extra benefit, operators may supplement with additional amounts of product needed after the inevitable accidental fecal release (AFR) by initiating 'Code Brown' on the control panel.

- improves water clarity
- improves efficacy of UV systems
- reduces turbidity by an average of 37.5%
- affordable Crypto treatment

### Can this replace my sanitizer?

**Pulsar CRS™** Clarifier is not a sanitizer and cannot be used in place of any EPA registered sanitizer. It should be used in conjunction with a proper sanitizer as another layer of protection in a total risk management program. Local health department guidelines for proper chlorine residuals, water balance and equipment maintenance should always be followed.

### Why not just hyperchlorinate? Won't that clear and kill everything?

A good sanitizer is generally the first defense against fighting recreational water illnesses. However, some pathogens such as *Cryptosporidium*, are highly chlorine resistant. Per the Model Aquatic Health Code (MAHC), in order to kill Crypto with chlorine (without CYA), it takes at least 15,300 Contact Minutes (CT). Therefore, to effectively kill Crypto in 1 minute, the chlorine level would have to be 15,300 ppm. Normal recommended chlorine levels are 1 to 4 ppm. The maximum chlorine concentration for open pool operations, based on the MAHC, is 10 ppm. At 10 ppm it would take 1530 minutes (25.5 hours) to kill Crypto at 7.5 pH.

### Will I notice any changes in the operation of my filter?

Regular backwashing should be practiced according to the filter manufacturer's recommendations. More frequent backwashing may be needed when first using this product in sand filters, due to the number of particles already present in the water. Once used regularly, and the filter has been backwashed or cleaned, the backwash cycle will return to normal and may even be extended. Regular use of **Pulsar CRS™** Clarifier improves filter efficiency by allowing embedded dirt and oil in the media to be released during backwashing.

### If I have UV, why do I need Pulsar CRS™?

Effectiveness of UV systems can be hindered in the presence of high turbidity in the water. High turbidity, for example, can cause a normally functioning UV system to be ineffective because the ultraviolet light waves are absorbed or refracted by the suspended particles. **Pulsar CRS™** System can reduce turbidity rapidly and substantially, filtering particles all the way down to 2 micron. The result is dramatically improved water clarity.

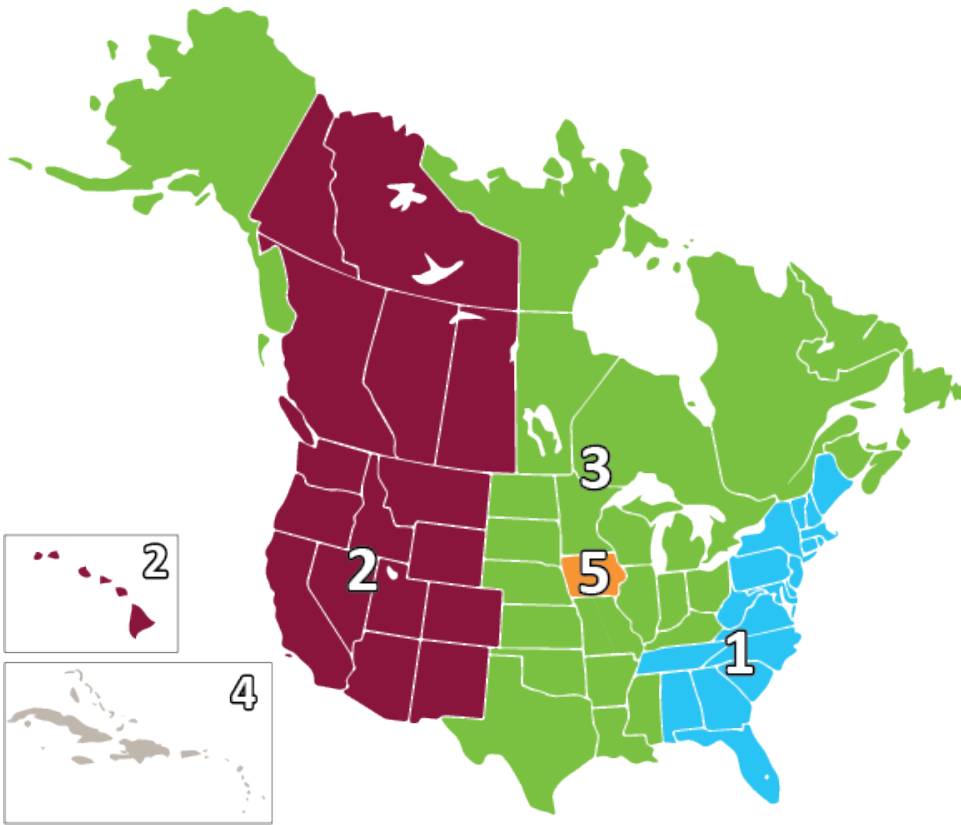
### What do I need to get started?

The **Pulsar CRS™** System can be easily installed on both new and existing **Pulsar®** Feeders. Order the kit below to get started.

<b>79620</b>	<b>Pulsar CRS™ Kit</b>
	Pulsar® ¼" NPT Cord Grip for Flow Switch Cable
	Pulsar CRS™ Flow Switch Cable
	Pulsar CRS™ PCP Pump
	Pulsar CRS™ PCP Pump Mounting Kit
	Effector Flow Switch
<b>30490</b>	<b>Pulsar CRS™ Clarifier (5 gallon)</b>

System functionality is **now integrated** into the control panel.





**Region 1 - Ed Barney**

Tel (860) 559-4599; ed.barney@lonza.com

**Region 2 - Alan Wing**

Tel (602) 503-8812; alan.wing@lonza.com

**Region 3 - Terry Grisham**

Tel (501) 517-7665; terry.grisham@lonza.com

**Region 4 - Stacy Willis**

Tel (256) 609-8214; stacy.willis@lonza.com

**Region 5 - David Peters / Charlie Rochford**

Tel (319) 575-0057; david.peters@lonza.com;

Tel (319) 238-9411; charles.rochford@lonza.com

**Customer Service**

Tel (800) 654-6019

Liz Hewitt - ext. 33; liz.hewitt@lonza.com

Rebecca Morrow - ext. 34;

rebecca.morrow@lonza.com

**Technical Service**

Tel (800) 4-PULSAR

icm.feeder@lonza.com

**Lonza Water Treatment**

1200 Bluegrass Lakes Pkwy

Alpharetta, GA 30004

pulsar@lonza.com

www.pulsarsystems.net

About Lonza

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Not only are we a custom manufacturer and developer, Lonza also offers services and products ranging from active pharmaceutical ingredients and stem-cell therapies to drinking water sanitizers, from the vitamin B3 compounds and organic personal care ingredients to agricultural products, and from industrial preservatives to microbial control solutions that combat dangerous viruses, bacteria and other pathogens.

Founded in 1897 in the Swiss Alps, Lonza today is a well-respected global company with more than 40 major manufacturing and R&D facilities and approximately 9,800 full-time employees worldwide. The company generated sales of CHF 3.8 billion in 2015 and is organized into two market-focused segments: Pharma&Biotech and Specialty Ingredients. Further information can be found at [www.lonza.com](http://www.lonza.com).

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