Thanks to Kerri Rivera for allowing this How-To document to be freely available for those who need the information to measure CLO2 concentration of their CD (MMS), CDS or CDH solutions. Originally published in her new Autism book of January 2014. That book is available at http://www.cdautism.org/

Appendix 6

Measuring the Strength of Your CD, CDS & CDH

by Charlotte Lackney

CD (MMS), CDS, and CDH work because all of them contain chlorine dioxide (ClO2). ClO2 is made when a 22.4% solution of sodium chlorite (SC) is activated with an acid, usually 4% hydrochloric acid (HCl) for CD and CDH; and 10% HCl for CDS. *

Sometimes it might be useful to measure the amount of ClO2 in those solutions, although that has not been done in the past when using CD. And, it may only be necessary to know the amount of chlorine dioxide if you are not getting the expected results. There could be a problem with the ingredients or process and knowing the amount of ClO2 in the solution could be helpful in determining what might be wrong.

The amount of ClO2 in a solution is measured in parts per million (ppm). It is always necessary to specify the volume of solution when talking about ClO2 ppm because the ppm will vary depending on the dilution of the solution.

If using CDH or CDS with the protocol in this book, it is assumed that you are preparing them at 3000ppm.

However, if the ingredients are of good quality and the CD, CDS or CDH recipe is closely followed, there is usually no need to know or measure the ClO2 concentration.

Both CD and CDH may continue to activate inside the body from whatever sodium chlorite has not been activated outside the body. That is not the case with CDS, as it has no sodium chlorite to continue activating inside the body.

Measuring the concentration of ClO2 can easily be done at home. You will need to purchase ClO2 test strips made by LaMotte or others. I have only used LaMotte Insta-Test® High-Range Test Strips, 0 to 500ppm (code #3002). The container's label has a chart showing seven colors on it with each color indicating a ClO2 concentration in ppm. Note: LaMotte recently changed the appearance of their labels, as shown below. Both are the same product. For more information, see their website:

www.lamotte.com/en/water-wastewater/test-strips/3002.html

Directions for how to use the LaMotte test strips are printed on the side of the container and need to be followed in order to get an accurate ClO2 concentration reading.

The numbers below each of the seven colors represent 0, 10, 25, 50, 100, 250 and 500ppm. Many people who use the test strips think the 50ppm color is the best one to use for color matching, because they can see the difference in color below and above that color more easily than the others.

If the ClO2 solution you want to measure is suspected to be 3000ppm, how do you measure that if the test strips highest ClO2 concentration color is 500ppm? Recall that I had said that it is always necessary to specify the volume of solution when talking about ClO2 ppm, because the ppm will vary depending on the dilution of the solution.

So if we dilute the suspected 3000ppm ClO2 stock solution with more water, the same amount of ClO2 will now be evenly spread out in the larger amount of solution if stirred. There will be less ClO2 in any one spot than before dilution, because the ClO2 is now dispersed into a larger volume of water.

Visualize what happens when a drop of red food coloring falls into a glass of water. It disperses throughout the water if stirred, and that dark red color is now much lighter because it is diluted in the water.

In order to read 3000ppm with a test strip, and have it match the 50ppm color on the container, we will need to dilute a small sample of the stock solution.

Stock solution (1ml)	÷	Desired dilution in ppm	=	Volume of water for dilution.
3000ppm		50ppm		60ml

The chlorine dioxide test strips (code #3002) made by LaMotte are available on the market with two different labels, although both are the same product. Both labels show the same measuring color chart on the outside of the container.

So, if we take a 1ml sample of the stock solution and add it to 60ml of water, then the stock solution is diluted 60 times its original volume. Technically, one should add the 1ml of stock solution to 59ml of water, for a total of 60ml, but using 60ml is easier to measure and you would not see the difference in ClO2 readings if 59ml of water was used.

To measure, pour 60ml of distilled water into a small glass and then add 1ml of stock solution. Stir well to evenly distribute the ClO2 sample in the water. Then take one of the test strips—taking care not to touch the pad of chemicals on the end of the strip—and dip it in the solution for two seconds. Keep the strip in one place in the solution and do not move it around during the two-second period.

Without flicking any of the solution off the strip, remove the strip from the test solution with the pad facing up and wait ten seconds. Now compare the color of the test strip pad to the color chart on the side of the test strips container (as shown above).

If the stock solution is 3000ppm, then the color on the test strip will match the 50ppm color on the container. Multiply 50 times 60 (the amount of dilution) and you get 3000 ppm.

If the color on the test strip does not match the 50ppm color on the container, try to estimate the ppm number between container colors and multiply that number by 60 to get the ClO2 concentration.

Tip: You can cut the strips lengthwise to get 100 strips instead of 50; just be sure not to touch the strip's pad with your fingers or your readings may not be accurate. Also it is important to keep the container tightly capped to keep moisture out which can affect the readings.

You can easily determine the amount of CLO2 in any dose by using the following simple formula:

Dose (mg CLO2) = Concentration (ppm) x Volume (liters)

http://www.cdautism.org/

* CDS-How to Make 3000 ppm using 4% HCL