

Newsflash April 3, 1997.
Section: Swimming Pools N° 1

**Report of experiments on the prevention and
removal of scale using "Scalewatcher™",**

1. The end-user

The Harrisburg Area Community College (USA) owns two Olympic sized swimming pools. See picture 1.



2 Rust problem. May 12, 1994

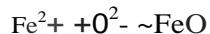
3 Barnacle problem. May 12, 1994

2. The process

The water in the pool has to be maintained at 20 °C/68 °F, however evaporation reduces the temperature of the water. To overcome this difficulty a circulation system was fitted. The water from the pool is sucked into the system, where several filters remove all kinds of pollution. The pump, situated behind the sand filter, drives the water through the heater and then back into the pool again. Muriatic acid is added to the water to control the pH balance. Chlorine is added to control bacterial levels. All piping is made of steel.

3. The problem

The swimming pool was experiencing serious problems with fouling in the pipes, drain and outlets of the swimming pool. After the installation of the pool in 1972, rust (see picture 2) and iron bacteria developed in the water and in addition there was a buildup of barnacles on the pipes. See picture 3. The plumbing system had become so badly fouled, that action had to be taken. Rust is caused by a reaction between oxygen and a metal. If the material is steel (which for the major part consists out of iron) rust forms according to the next equation:



In a closed system, where the water has no contact with air, this problem does not arise. In a swimming pool oxygen can easily mix with water due to the large surface area. In addition to there being large amount of oxygen, muriatic acid is added. This acid is very corrosive so that steel pipe will corrode and eventually need replacing.

Robert Finley, Assistant to the Director of Physical Plant, dismissed chemical cleaning as unsuitable for swimming pools. Repiping, at a cost of half a million US dollars, was prohibitive. It was important that another method of cleaning of the pool was found.

4. The experiment

After researching various products, Robert Finley decided to test the *Scalewatcher*' Electronic Descaling System to remove and prevent rust. The Scalewatcher Olympic was installed on May 12, 1994 and on that day a picture was taken of the outlet of the North Shallow Pool. See picture 2. Rust at the bottom of the outlet is clearly visible. After half a year, on October 6, 1994 another picture (4) was taken of the same outlet. Progress is clearly visible. Picture five was taken on September 9, 1995 and shows that the rust has disappeared completely.



4 Rust is disappearing. October 6, 1994

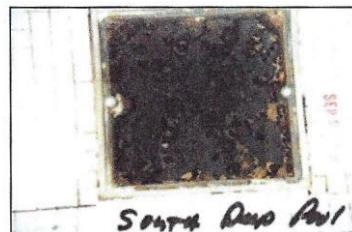


5 Rust disappeared. September 9, 1995

Scalewatcher also decreases the other problem, barnacles of iron bacteria. Pictures 3, 6 and 7 show how *Scalewatcher* is removing the barnacles at the outlet in the pool's deep end. These pictures have been taken from the Southern Deep Pool on respectively May 12, 1994, October 6, 1994 and September 9, 1995. The pictures show also a change in color of the barnacles from brown to black. This is a good sign according to Robert Finley.



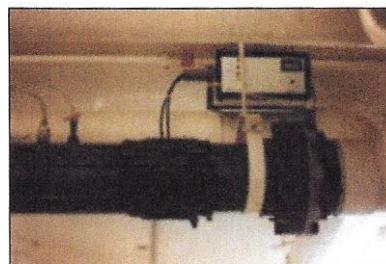
6 Less barnacles. October 6, 1994



7 Barnacles shrunk and became black. September 9, 1995

5. Conclusion

The photographs that were taken during the trial showed that Scalewatcher had successfully begun cleaning the pipes, drains and outlets. The College was so impressed with Scalewatcher, that it immediately bought a unit. By using the *Scalewatcher* 2/3 of the total amount of muriatic acid could be saved. The use of chlorine could also be reduced with 1/3. This will especially be welcomed by swimmers with sensitive skin and those who get sore eyes or have an allergic reaction to large quantities of chlorine in the water. It was also found that scum deposits (body yeast) disappeared from around the pool edge at the waterline and stainless steel fittings returned to their original condition. The pool water generally looked cleaner and fresher.



The device