

(Continued from page 18)

Filtered showerheads/handels

Filtered showerheads contain a replaceable filter cartridge inside the showerhead.

Filtered shower handles contain replaceable filter cartridges found in the shower wand. Like filtered showerheads, these designs include a replace-

able filter cartridge. □

Sherry Farley is vice president of sales for Sprite Industries, Inc, Corona, CA, a manufacturer of shower filtration products for nearly 30 years.

Enhanced phosphonate test method

By Mario C. Uy and Domingo A. Mesa

Phosphonates are widely used in many water treatment applications. To apply phosphonates properly, users need a reliable and accurate testing method.

There are two common methods for testing phosphonates:

1. Titration with thorium nitrate using xylenol orange, chromoazurol S or other metal indicators.

The most common drawbacks are:

- The pH of the sample must be adjusted from 2.5 to 3.0 — time consuming because the pH must be retested during any adjustments. Buffers were designed to make the pH adjustment less costly and time consuming, but they are not effective in high alkalinity applications. The acid species of the buffers are usually not enough to neutralize the alkalinity completely.

- End-point masking or shifting due to fluoride and/or sulfate interferences. Fluoride and/or sulfate react with thorium nitrate, resulting in false high phosphonate levels.

- Indicator failure due to oxidizers, such as chlorine.

- Suppressors can remove the fluoride, sulfate and oxidizers, but they add cost, time and procedural steps to the test.

2. Digestion of the phosphonates with further analysis of the resulting orthophosphate.

This method is more accurate than the thorium nitrate method, but it has the following difficulties:

- Complex to perform.

- Needs expensive glassware and apparatus, such as a colorimeter.

- If the sample contains other phosphates, the orthophosphates derived from them will inaccurately contribute

to the phosphonate level, resulting in a mistakenly high reading.

- Different phosphonates and their blends render different amounts of orthophosphate, resulting in a myriad of possible combinations.

- Training required to perform and to interpret the test.

New testing developments

The most recent development is the enhancement of the thorium nitrate titration method, which uses a special indicator to indicate when the alkalinity is completely removed during the pH-

adjusting phase. This ensures that the subsequent addition of the buffer will not be affected by the alkalinity, thus producing the critical pH of 2.4 to 2.8 reliably.

Additional developments have been made to incorporate the suppressors for fluoride, sulfate and oxidizers into the buffer, eliminating the steps of adding them separately. □

Mario C. Uy and Domingo A. Mesa are with World Environmental Technologies, Inc. (WET, Inc.), an international company specializing in private label test kits for water treatment companies.