

IAN WRIGHT is the managing director for Ozone Services Industries, specialists in the supply of ozone treatment systems to the manufacturing industry.

in the finished, bottled soft drink. A second stage of ozonation is recommended in fruit juice-based soft drinks as its pH ranges from six to seven. Bacteria can thrive and proliferate in these pH ranges. An ozone destructor may be necessary in fruit juice bottling if there is a possibility that residual ozone will impart off-tastes to the final drink by the oxidation of organic materials in the fruit juice.

- **Bottling lines** Several bottlers currently use ozone for sanitising the GAC filters in the line and to eliminate the formation of chlorinated organic compounds. Over weekends, when the bottling lines are shut down and the plants are closed, the GAC filters are backwashed constantly with ozonised water to kill the bacteria on the GAC particles. The fill lines and vessels can also be treated with ozone-containing water after shift shutdown.

The following morning, the lines will be clean and safe to drain, as the ozone will have disappeared.

- **Concentrate water or pure water** Another application for ozone is the process of preparing waters to accept concentrates or other ingredients. After the water has been super ozonised, treated with lime,

Ozone is quicker and stronger than chlorine as a disinfectant. It can disinfect 600 to 3 000 times faster than chlorine and is the most powerful water-treatment oxidant known to man

ferric chloride and filtered, a small dosage of ozone (0.5 - 2mg/litre) is added to ensure the absence of micro organisms in the treated water during storage and up to bottling.

In processes where ultra pure water is required, ozone is an easy and effective method for the sanitisation of pure water systems that do not require specialised

operator skills. As ozone disinfection is a continual process allowing very little chance of recontamination, many operators rely solely on the ozone treatment and have dispensed with regular shock disinfection with either steam or other chemicals. An efficient way of producing ozone for ultra pure water applications is with an electrolytic ozone generator that produces ozone from the water being treated. Ozone is ideally suited for pure water loops because only low concentrations are necessary to sanitise the system. There are also no objectionable by-products or residue after the ozone has decomposed to oxygen.

- **Air** Cross contamination from infected airborne particles can be prevented by using ozone during periods when the factory is vacant and to treat premises, air conditioning, ducting etc. If used during working hours, sensors are recommended to maintain safe and effective levels, which may be impractical in well ventilated areas. ■

Ozone Services Industries -
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New technology for carbon column regeneration

Activated carbon (AC) filtration is most effective in removing organic contaminants from water. As organic contaminants are often responsible for taste, odour, and colour problems, AC filtration can generally be used to improve aesthetically objectionable water.

TO MAKE CERTAIN that contaminants are removed, regular maintenance is needed to flush the filtered contaminants from the filter bed. Conventional ways to regenerate GAC columns include steam treatment and back-flushing, but biocides are also used where microorganisms have become established in the filter bed.

In instances where the microbial colonies mature into sticky biofilms, biocides become increasingly less effective and inevitably these 'chemically tolerant' microbes will contaminate the downstream reticulation infrastructure. Furthermore, where persistent microbial contamination occurs into the effluent stream,

vigorous interventions are necessary and may call for complete replacement of the GAC bed. This is a costly exercise and without due attention to mandatory maintenance procedures as well as down-stream sanitation of reticulation infrastructure, the problem will persist.

A new solution

Based on trial data accumulated in 2010 at a well-known beverage facility in South Africa, Electrochemically Activated Water (ECA) sanitation technology brings an innovative approach to regeneration of GACs and addresses the issue microorganisms.

ECA's charge (Redox or Oxidation Reduction Potential) based technology removes microorganisms effectively as a result of disturbing the electrical charge within these organisms, forcing them to implode. Microbes cannot build up a tolerance to this charge. Additionally where biofilm is present, ECA forces its detachment from surfaces as a result of breaking the electrostatic and electrochemical bonds that maintain the attraction between the biofilm and the GAC surface.

As a result of and ECA intervention it resulted in the following:

- An increase in the lapse time for recurrence
- Reduction in microbial contamination to acceptable limits
- Regenerates GAC particles
- A very effective means to remove biofilms
- A non-hazardous treatment. ■

Radical Water - www.radicalwaters.com