

# Ozone in the Beverage Industry – Bottling Plants

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The beverage industry faces several unique challenges when it comes to bottling product. One such challenge, how to meet disinfection requirements effectively and efficiently, is key in ensuring the production of safe products for consumers.

Ozone technology is used in almost all bottled water production facilities at some point in the bottling process. Ozone treatment is one of the most effective microbiological barriers that bottling plants can use of to keep consumers protected against microorganisms.

The International Bottled Water Association (IBWA) standards, based off the Food and

Drug Administration (FDA) regulations, recognize ozone as a safe disinfectant for use in bottled water.

Through the process of oxidation, ozone produces an effective and eco-friendly biocide which removes bacteria, viruses, and microbial cysts. Compared to the negative impacts of other disinfectants which produce chemical by-products or residues during sanitization, ozone naturally breaks down into harmless oxygen (O<sub>2</sub>) after disinfection. Ozone is also effective in removing unwanted odor and improving taste as it oxidizes both organic and inorganic substances in the water.

The process utilizes a low dose concentration of ozone in water just prior to bottling, which disinfects the water, bottle, and cap. The IBWA recommends that ozone be applied in the 1.0-2.0 mg/L range for a contact time of 4 to 10 minutes. This level maintains a 0.2 - 0.4 ppm residual ozone level while bottling, allowing for the bottles to be disinfected and sanitized while filling.

A typical ozone system consists of an ozone generator, venturi injector, recirculating pump, contact tank, destruct, and ozone monitors. Ozone monitors can be found at several different locations in a bottling plant.

From ozone generation monitoring and process control, residual ozone monitoring off the contact system, to low level ozone detection and monitoring for the safety of

those working around the equipment, ozone monitors are necessary for the process to be safe, effective, and cost efficient.

Teledyne API offers high quality and reliable ozone monitors that benefit this type of application.



**Figure 1: Model 465L Ozone Monitor**

The Teledyne API 465L is an extremely stable UV photometric ozone monitor that is ideal for critical low-level ppm safety and process applications. Ozone safety monitors are necessary for leak detection and exposure levels. Higher levels of ozone can negatively affect human health and exposure should be limited or avoided completely. The 465L is available in single or multi-channel option, capable of monitoring up to 6 different locations with one instrument.

The 465L is easy to install, set-up, and configure by the user. With an accuracy of  $\pm 1\%$  of full-scale range and a lower

detectable limit (LDL) of 3 PPB, the 465L is a best-in-class choice for safety monitoring at bottling plants.

In ozone generation monitoring and process control, Model 465H for high concentration ozone, is capable of measuring concentrations from 0-5% w/w to 0-25% w/w. Ozone generation process control is key to ensure precise concentrations are being produced. For example, over producing ozone adds cost and may increase the likelihood of contaminants such as bromate formation when bromide is present in the water source.

The 465H offers built in pressure and temperature compensation, auto zero calibration and an optional ethernet for expanded communication capabilities. The 465H is ideal for meeting the demands of continuous monitoring and closed loop control of the generator.



**Figure 2: Model 465H Ozone Monitor**

### Conclusion

Ozone treatment is a powerful disinfectant and oxidant. Bottling plants using this technology depend on ozone monitors to keep workers and consumers safe.

Teledyne API's 465 series monitors provide reliable ozone monitoring for bottling plants, water treatment, food processing/storage, and beyond.

For more information, and product specification documents for the monitors covered in the note as well as off gas and dissolved ozone monitors in the 465 series, please visit the TAPI website at: [Gas Process Ozone Instruments \(teledyne-api.com\)](https://www.teledyne-api.com/Gas-Process-Ozone-Instruments) or contact our sales team at: [api-sales@teledyne.com](mailto:api-sales@teledyne.com).