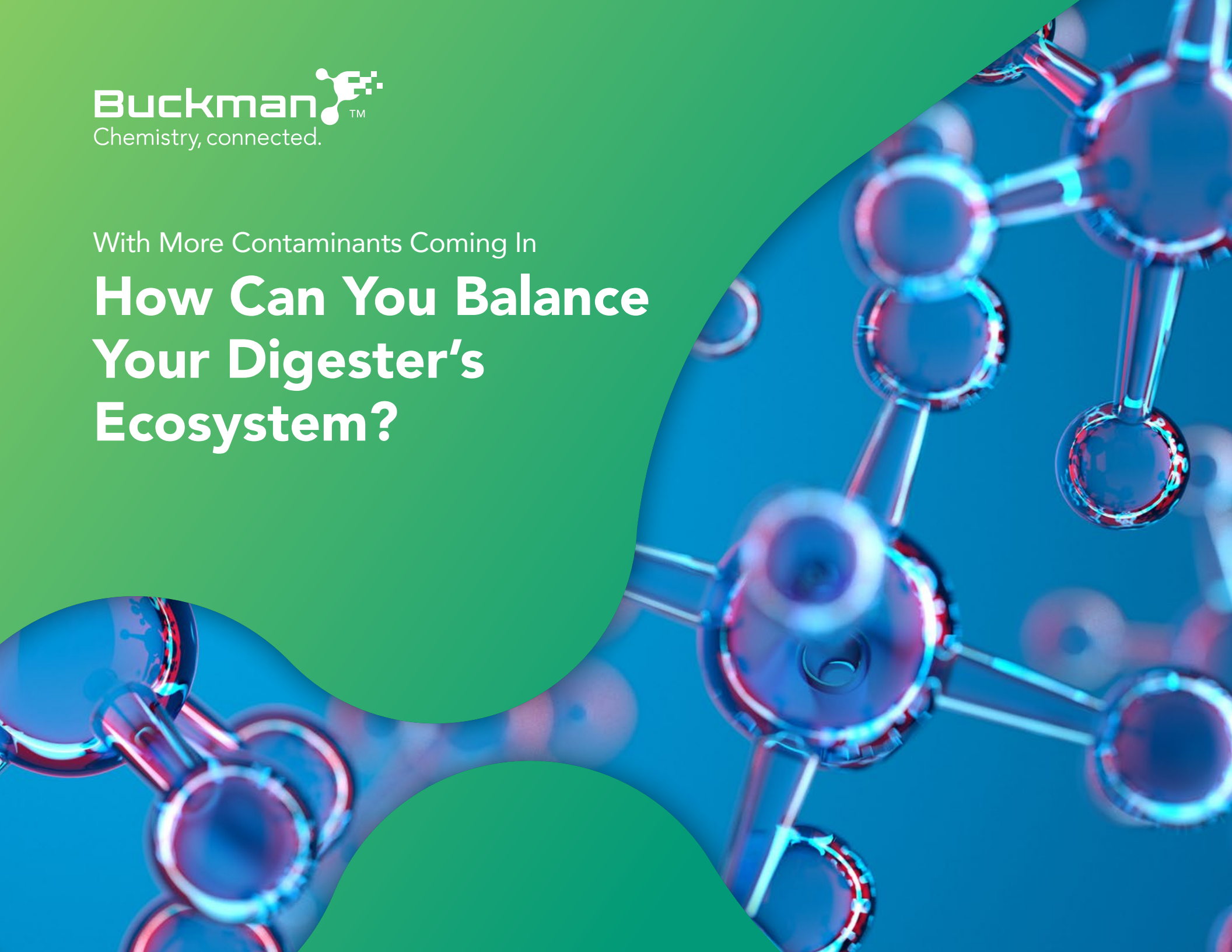




With More Contaminants Coming In

How Can You Balance Your Digester's Ecosystem?



The Challenge:

Effluent treatment and operational issues

You have to carefully manage your anaerobic digester to ensure bacterial health, reduce oxidant entry, minimize dissolved calcium, and minimize odor. But changes in the quality of recycled fiber are making it harder to stabilize your digester's system. Waste paper is trending upward in ash content, which creates more dissolved calcium. You also have to deal with more starch and higher degrees of closure, which increases the nutrient loading on your digester so the COD and BOD loadings are higher.

Some mills use nutrients, seed sludge, and pellets to maintain the touchy ecosystem—but that can get expensive fast. Others may bypass the anaerobic digester or remove water to another wastewater treatment plant if local regulations allow. Because

microbial ecology and how digesters work can be difficult to balance, many mills rely on outside experts to help. That kind of specialized expertise can be costly and limited to the anaerobic digester—consultants rarely understand the papermaking process as well.

If you can't maintain the right ecological balance in your digester, you can't maximize methane production, and you increase the likelihood of lower efficiency of COD/BOD removal and the other costly remedies. And if you can't process water properly, you can't recover it into the mill or may face compliance fines. Chronic odor problems can also generate public complaints, poor publicity, and even fines and closures.

An anaerobic digester is a **delicate ecological system** that relies on several critical elements to work efficiently.

- ▶ ▶ ▶ • Ideal balance of microorganisms and methanogens
- Good pre-acidification
- Controlled pH, ORP, and temperature
- Stable nutrient loading and solids
- Optimal sludge granularity

The Solution:

Balance biological activity in the paper machine



What happens at the paper machine affects what flows into the Effluent Treatment Plant (ETP). Shock-dosing monochloramine (MCA) can create extremes with adverse effects. Cyclical dosing can foul the ETP with calcium and upset the balance of the pre-digestion material needed for the anaerobes.

With Buckman's continuous dosing methodology and technology, you'll dose MCA continuously at the right levels. You'll maintain full control and prevent problems by treating the back system first, lowering the dose as it gets closer to the ETP. You'll reduce ORP and dissolved calcium, stabilize pH,

and control the microbial population levels that reach the reactor. You'll also enhance the acidification process because the BOD that creates the VFAs that the anaerobes eat is available in that process.

Using Buckman's continuous monitoring and rebalancing solution, you'll be able to adjust the dosage to keep the system balanced. That means you can minimize upsets and overloading to enhance the overall effectiveness of the ETP—leading to a higher quality of water returning to the machine, more effective odor control, and improved methane production.

**Keep the system
balanced with MCA**



The Solution:

Minimize scale buildup in the reactor

Every time you have to shut down to clean up scale in your anaerobic digester, you lose productivity and efficiency. With this novel calcium stabilization application, which is continuously monitored by trained Buckman associates, you can prevent your anaerobic digester from becoming a bottleneck by reducing the need to shut down to clean up scale in the digester. This means you'll keep the ETP at a steady running state to its design and maximize plant uptime.

CASE STORY: A leading provider of corrugated packaging solutions worldwide works diligently to **minimize its impact on the climate**. Noting that rising temperatures increase stress on water resources—a critical element to papermaking—the company has worked with Buckman to maximize water recirculation and reduce starch waste and effluent contamination.

- ▶ **74% reduction** of calcium carbonate precipitation in anaerobic reactors
- ▶ **60% more biogas** with a 1.5% savings to total consumption of fresh methane
- ▶ **40% reduction** of calcium carbonate in the activated sludge tank

Improve anaerobic digester health

Your anaerobic digester needs all the elements in the system to stay in balance. And they will when you work with Buckman MCA.



With Buckman, you'll dose MCA continuously—with **monitoring and rebalancing**—to achieve maximum digester effectiveness while minimizing MCA that flows to the ETP.



You'll **minimize scale buildup** in your reactor using a novel calcium stabilization application that is monitored by the **Buckman Insights Lab** so you can avoid frequent digester shutdowns for cleaning.



By keeping your anaerobic digester healthy to begin with, you'll **keep the ETP up and running** and improve its effectiveness.

All this means you'll use MCA not just to control slime and odor—but also to **maintain stability throughout the process.**

Buckman™
Chemistry, connected.

Interested in learning more?
Please [visit our website](#) to get started.