DISCUSSION GUIDE

478 RETHINKING POWER PLANT WATER AND STEAM CHEMISTRY WITH BRAD BUECKER (PART 2)

EPISODE SUMMARY

In Part 2 of this conversation, Trace Blackmore and Bradley “Brad” Buecker continue their discussion on power plant water and steam chemistry by focusing on the realities that shape decisions in the field. Brad describes how “lean and mean” staffing can leave complex plants without enough chemistry knowledge to operate advanced instrumentation or recognize early warning signs. He shares examples of underused online analyzers, overdesigned pretreatment systems, organic contamination in condensate return, and customers hoping for a simple chemical fix when the real solution requires operational or capital investment.

The conversation also explores the consequences of technical errors, including a costly ppm versus ppb permitting mistake, as well as broader issues such as PFAS, zero-liquid-discharge trends, membrane advances, cooling water changes, and alternative water sources. Brad emphasizes continuous learning, mentorship, and knowledge transfer as experienced professionals retire. He also reflects on the essential role of water and power infrastructure, reminding listeners that much of modern life depends on systems most people rarely see.

DISCUSSION QUESTIONS (GROUP DISCUSSION)

1. Brad describes “lean and mean” plants where operators manage complex systems with little or no dedicated chemistry support. How does this staffing model show up in facilities you work with, and what risks can it create for safety, reliability, and decision-making?

2. In one example, a comprehensive online water-chemistry system had never been turned on because no one knew how to operate or interpret it. How can teams better plan for both the capital cost and the competency required when investing in advanced instrumentation?

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DISCUSSION QUESTIONS (GROUP DISCUSSION)

3. Brad describes pretreatment systems that were more complicated than the source water required. What questions should be asked early in a project to prevent over-designed or poorly matched treatment systems?

4. The organic chemicals plant case shows how high-TOC condensate return can create serious boiler and superheater problems. How can water professionals help customers understand when a problem requires a system-level correction instead of a low-cost additive?

5. Brad's ppm versus ppb permitting story shows how one specification error can create major technical and financial consequences. What quality-control steps should be in place before permits, RFPs, or treatment specifications are submitted?

6. Brad connects PFAS, zero-liquid-discharge systems, and solid residuals management. How should water professionals communicate emerging contaminant risks in a way that is technically honest, measured, and useful?

DISCUSSION QUESTIONS (PERSONAL REFLECTION)

7. Where in your current work have you seen a tool, analyzer, or system underused because the people responsible for it were not properly trained?

8. Think about a time when a customer or team wanted a simple "pixie dust" solution to a complicated problem. How did you respond, and what would you do differently now?

9. What is one area of your work where you may need to slow down and check units, assumptions, or specifications more carefully?

10.Brad encourages people to attend industry conferences and build external mentor relationships. Who are the experts or peers you could reach out to when you need a second opinion?

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DISCUSSION QUESTIONS (PERSONAL REFLECTION)

11. Brad warns against knowledge hoarding and encourages experienced professionals to mentor others. What knowledge do you currently have that someone else in your organization would benefit from learning?

12. Brad reflects on continuous learning and the value of connecting reading with real field experience. What formal or informal learning have you been postponing that could improve your effectiveness?

TRY THIS IN YOUR ROLE

- **Audit one underused tool or analyzer:** Identify one piece of instrumentation that is installed but not fully understood or consistently used. Ask whether the team knows how to operate it, interpret the data, and act on the results.

- **Create a "capital plus competency" checklist:** Before recommending or approving a new treatment system, include training, staffing, interpretation, maintenance, and troubleshooting needs in the project review.

- **Run a unit-check review on one current document**: Review a permit, proposal, specification, or report for unit errors, order-of-magnitude mistakes, and assumptions that could create unintended consequences.

- **Build a small advisory circle:** List three to five experienced professionals you can contact for technical perspective. Include people from different specialties so you are not relying on only one source of guidance.

FULL EPISODE DETAILS

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