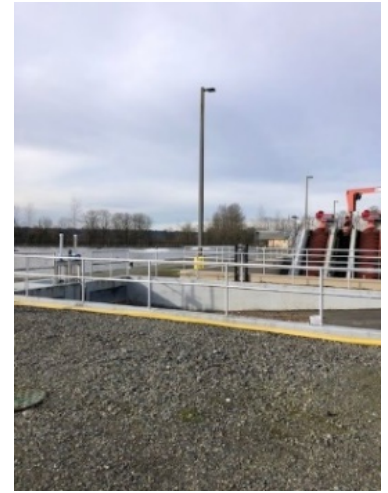
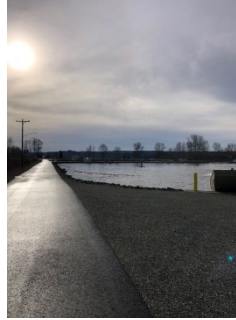




*It all started with a workshop...*

We recently sat down with Duane Leach, Karen Allen and Frank Schorsch, the frontline operating staff at Snohomish Wastewater in Washington State. We discussed their foray into use of PAA as a primary disinfectant.

Back in 2014, Karen attended a workshop at a local tradeshow where the benefits of peracetic acid were presented. That piqued her interest, because at the time, Snohomish was considering how to change their method of disinfection at the wastewater plant. For years, they had been using chlorine gas to achieve their kills, then de-chlorinating with sulfur dioxide gas.

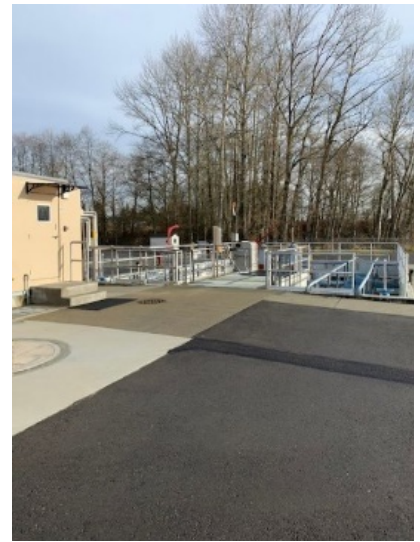


But the City leadership wanted to get away from gas due to its danger and proximity to nearby residents. And though the gasses were relatively easy to source, the price kept going up and up each year, forcing the staff to consider other methods of chlorination - like liquid hypo or on-site generation.



So, when Karen heard about PAA, (or peracetic acid) – a chemical used extensively in Europe, Canada, and other parts of the world for municipal wastewater treatment – naturally she wanted to hear more.

Here is what she learned: PAA is an extremely powerful disinfectant. And unlike chlorine, it requires almost no retention time. It works immediately to oxidize and disinfect disease-causing microbes including bacteria, spores, helminths, and protozoa. Furthermore, unlike chlorine, PAA decomposes into biodegradable residuals of vinegar (acetic acid) and hydrogen peroxide that can pass fish toxicity tests without any kind of removal process. Not only that, but the residuals of PAA are not toxic, mutagenic, or carcinogenic – so they do not leave any harmful disinfection by-products (DBPs). Peracetic acid can also disinfect over a wide range of pH and is unaffected by nitrate and ammonia concentrations.



***Peracetic Acid does not form disinfection byproducts or leave chemical residuals***



Duane, who is the lead operator at Snohomish, was also investigating alternatives to chlorine gas – primarily due to rising costs, public safety, all the required additional safety measures, and pressure from the Department of Ecology to move away from gas. In a nutshell, Snohomish was actively searching for a more feasible solution.

UV was also considered, of course. But it was quickly apparent that several factors, most especially the initial capital cost (and ongoing maintenance) would be more than could be justified by a small-town wastewater plant. They needed a reasonably inexpensive disinfection option, and PAA just seemed like a good thing to investigate further.





After all, the sign on the front of their plant says they are all about, “Innovation in Water Quality” so why not check out this new method?

Tom Giese of BCH Consultants took the engineering lead, and after three long years – much of that time convincing the regulators to warm up to the idea – they got their chance. Finally, in 2017, Tom was able to get Snohomish approved by DOH to use PAA on a trial basis. The trial lasted nine months, and netted some very useful information, such as:

1. PAA is indeed a tremendously powerful disinfectant that works well with the Snohomish effluent. The original estimated dose was 2-3 ppm, but it was soon discovered that a 1 ppm dose was sufficient for the City to achieve their intended results.

2. Originally, the goal was to use a sophisticated method of compound loop control to optimize the PAA dose. However, after several attempts, it became apparent that peracetic acid is extremely difficult to measure in very low doses in an application such as municipal wastewater. Eventually, the goal of residual control was abandoned, giving way to a more simplistic, yet surprisingly effective flow proportional system.



3. The original concern was that PAA might be quickly consumed in the contact chamber – especially in the low flows of summer weather – therefore failing to achieve full disinfection. But after several weeks, it was discovered that a portion of the PAA dose maintained all the way through to outflow. Thus, it did not appear that changing dosing locations would be necessary. The state currently allows Snohomish a no more than 1 ppm residual at final effluent.

Ultimately, all the information they gathered in the trial was fully analyzed, and it was determined that peracetic acid was indeed an excellent alternative to chlorine. PAA is easier, safer, and cheaper to operate than the combination of Cl<sub>2</sub>/SO<sub>2</sub>. The State of Washington agreed, and a permanent move to peracetic acid was eventually approved in early 2020, including lab accreditation.



Consequently, a shiny new and fully equipped dosing building, provided by ProMinent Fluid Controls was installed on-site a few months ago, and Snohomish has been using their new setup ever since. Early on the crew reported a hiccup or two, but startup issues were solved. Overall, they are extremely happy with the new system – and with TMG Services, Enviro Tech, ProMinent, and the entire project team. On a side note, if you are curious to know if all PAA chemical is created equal, just ask Duane, Frank, or Karen... they'll give you the lowdown!

And along those lines - if you are managing a small to mid-sized (or heck, even a large) wastewater treatment plant in the Northwest that utilizes chlorine for disinfection, you might want to at least consider PAA as a viable, safe, and cost-effective STATE-APPROVED alternative. It may still be relatively new in this part of the world but take heart – Washington is on board... and hey, Snohomish did all the heavy lifting in terms of getting it approved.

At TMG, we would love to help you consider your options. And if you're seriously considering the idea, we can help you through the process of sending in an effluent sample, whereas Enviro Tech will conduct a no-cost analysis to see if PAA would be an amenable solution for your application.



800-562-2310  
Specialists in Chemical Feed  
[www.tmgservices.net](http://www.tmgservices.net)