

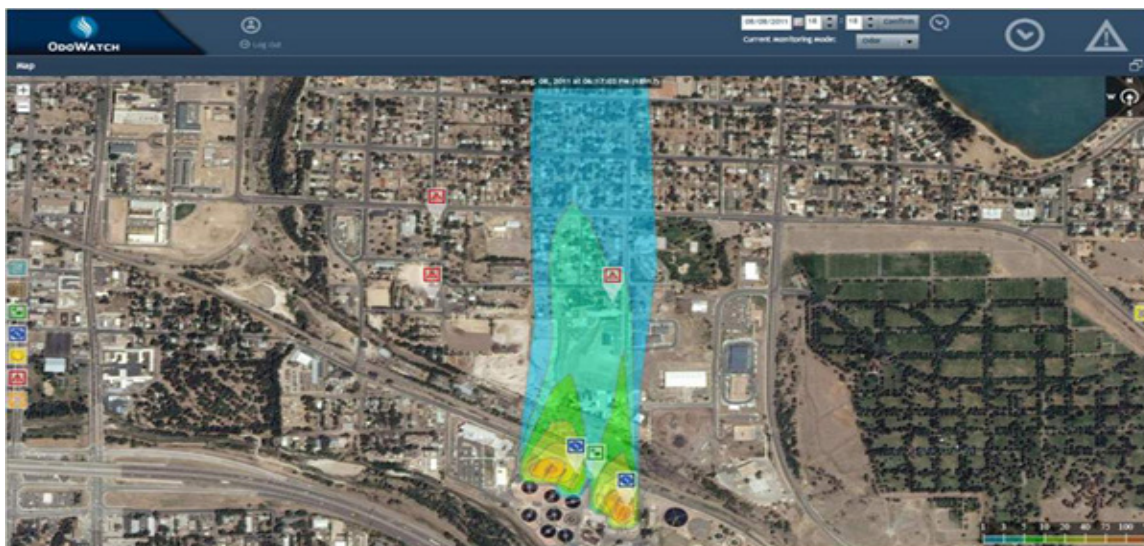
## **Odor Control – How Much Is Enough?**

*By Sharon Paterson, Kruger*

If you work at a wastewater treatment plant, you are acutely aware of the role of off-site odor in the cost to operate your facility. For most facilities, it is not unusual for odor controls to cost 10% or more of capital improvement projects and operating budgets. But how do you know when you have enough odor controls? If you still get complaints from neighbors even after having all your odor sources addressed, what then? Do you need to do even more to be a good neighbor? And then there is the issue of competing odors. If a neighboring business may be the source of nuisance odors, how do you defend yourself against those complaints?

Before you decide to invest more in costly controls, it may be time to consider odor monitoring. Kruger is the exclusive U.S. supplier of OdoWatch®, by Odotech, the world's first real-time, continuous odor monitoring system. It uses actual weather data captured on site, combined with dispersion modeling and emission rates from electronic noses (eNoses), which are trained using standard methods (EN 13725/ASTM E679-941) to recognize the signature odors from specific sources. Several cities in the U.S. use OdoWatch to help them manage odors around the clock, and optimize odor control systems to reduce costs.

One municipality that uses OdoWatch selected it in order to see if more odor controls are needed at their plant. They had already invested millions of dollars in odor controls, but they were still getting complaints from a neighbor who claimed his outdoor business was being harmed by nuisance odor from the plant. They planned to monitor two processes that they believed contributed the most to off-site odor. To do this, they installed an OdoWatch system with two eNoses on the side closest to their neighbor. A weather station was also installed adjacent to the processes. Once the eNoses were trained to recognize the unique odor of each process, they were then able to view the real-time odor plumes on their web-enabled system.





What did the OdoWatch system tell them? This picture is an actual screenshot from the system at the clients' site. Each color of the plume represents a range of "odor units" that correlate to a specific concentration of odor. Odor units (o.u.), which are similar to d/t or dilutions-to-threshold, can be used to assess receptors' exposure to odor concentration. One o.u. is the detection threshold, at which point 50% of a population can detect an odor. Between 5 – 7 o.u., most people will begin to recognize an odor. Above 10 o.u., a plant operator can expect to get complaints from the affected residents. This is the most advanced science available to assess odor impact.

The red icons on the screenshot indicate where "alert points" have been set in the system. They indicate where a receptor is located that has been shown to be sensitive to odor. The plant operator sets odor thresholds in the system for those locations. The system calculates the predicted odor concentration for those sites, and if the thresholds are exceeded, the system automatically alerts the operator. They use the system to see which monitored source is contributing the most to the odor at the time. If there is an action they can take to mitigate an odor, they have the chance to do something about it before it becomes a bother to the neighbor.

OdoWatch redraws the odor plume every four minutes and provides immediate information for the operator. In fact, if an odor complaint is called in, there is no need to travel to the location of the complaint – they can view the plume in real-time to diagnose the problem, which saves time and cost for the facility. The data are retained in history in a database that is easily accessible for analysis. Our client has looked at the data to learn several things:

- Seasonal variation in odor impact
- Monthly total impacts at each alert point
- Off-site impacts grouped by odor units (odor concentration)
- Before/After analysis of odor improvement measures

So what did the first year of odor monitoring tell our client? They had expected to see more impacts during the summer months as warmer wastewater temperatures increase odor production. However, the data did not show this to be the case. They learned that the higher temperatures increase the buoyancy of the plume rise, which aids in dispersion, creating fewer off-site impacts. They were surprised to find that there were more impacts during the autumn months. In addition, they found that there are times when the likely odor culprits may be from other sources, such as a nearby garbage disposal company and portable toilet storage area. Also, because the OdoWatch system enables you to see the degree to which each monitored source contributes to an odor event, the client was able to determine the relative impact of each monitored process. They were able to overwhelmingly conclude which process will benefit the most from added controls. Use of this data will help them build a case to fund added controls.

With more residential communities being built closer to municipal utilities, it is becoming more important than ever to understand the impact that odors from plant operations have on neighbors. Residents are also becoming better educated about the subject, and taking action. What used to be sufficient odor controls may no longer be the case. The best way to understand is to monitor with real-time odor monitoring tools like OdoWatch, so that scarce funds are put to the most beneficial use. **You can learn more by contacting the author, Sharon Paterson, at Kruger: [Sharon.paterson@veoliawater.com](mailto:Sharon.paterson@veoliawater.com).**