

Kemira H<sub>2</sub>S-Guard™

Frees your wastewater system from odor and corrosion

**kemira**





## Overcoming odor and corrosion in wastewater systems



As a wastewater system operator, you are probably more than familiar with two of the most common problems: odor and corrosion.

Depending on flow velocity, wastewater composition, temperature and the amount of free oxygen, septic conditions are easily created in the system. This generates hydrogen sulfide, a sewer gas that smells bad, is toxic and in higher concentrations flammable.

Hydrogen sulfide is also a trigger for corrosion in wastewater systems. In the worst cases, the corrosion may advance several millimeters in a year, shortening the lifespan of the system and causing a potential environmental hazard.

The **Kemira H<sub>2</sub>S-Guard™** solution provides the measurement and control of hydrogen sulfide levels at source. This keeps the community odor-free, ensures safe and healthy working conditions, and prevents costly maintenance to the infrastructure. It builds on a half-century of experience and expertise in water treatment that has already earned us the trust of more than 200 customers in 30 countries.

# H<sub>2</sub>S-Guard™ – a total system that measures, monitors & controls

Kemira H<sub>2</sub>S-Guard is a reliable, efficient, remote-control solution to odor and corrosion problems.

It is a total system that includes all the components needed to measure, monitor, and control hydrogen sulfide levels.

H<sub>2</sub>S-Guard gives you an overall picture on what is happening inside your wastewater network. It provides instant information on current H<sub>2</sub>S levels in the network and gives a trend view of changes to the essential parameters over time.

Based on measurement data and preset contamination limits, H<sub>2</sub>S-Guard can be configured to automatically dose treatment chemicals into the system to slow the harmful processes. You can choose from Kemira's extensive range of ferrous, ferric, and nitrate based chemicals.

Benefits of H<sub>2</sub>S-Guard:

- low investment cost
- calculable running cost
- can be scaled up or down to meet future challenges
- fights the problem at its source instead of at the end of the pipe
- full-scale trials are possible before the final decision



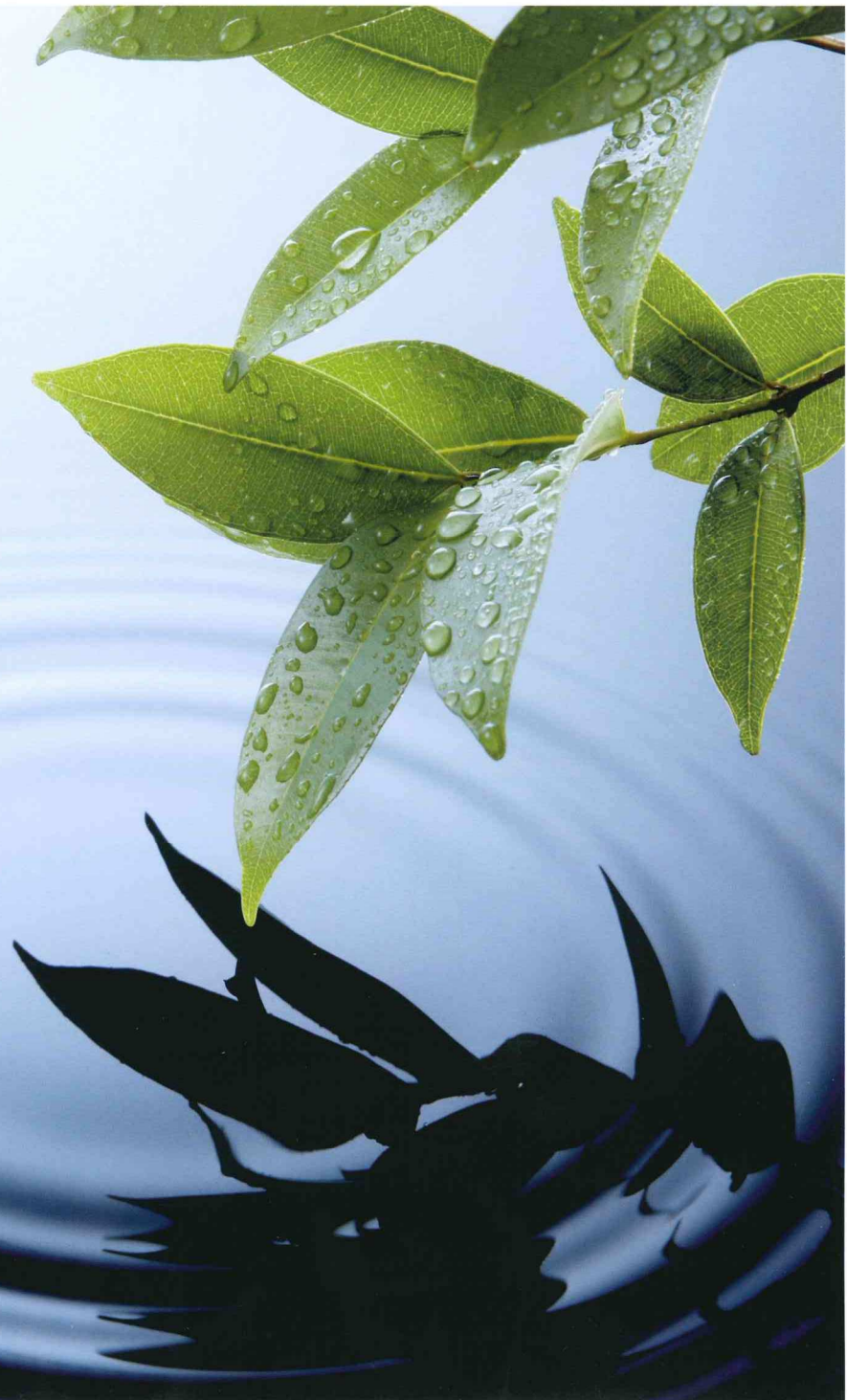


## From sewer smell to fresh air

Aerobic bacteria live in environments where oxygen is present. They degrade organic matter in wastewater, consuming all free oxygen in the process. Once all free oxygen has been consumed, they proceed to use nitrates instead. When the nitrates run out the sewage turns septic.

Now anaerobic bacteria will take over and seek other electron acceptors: sulfur-containing compounds such as sulfate. These bacteria reduce the sulfate to sulfide, leading to  $\text{H}_2\text{S}$ , which is responsible for the characteristic rotten-egg smell. In addition to the foul smell, hydrogen sulfide in sufficient concentrations is highly toxic and flammable.

The key to eliminating the odor and hazards of hydrogen sulfide is to understand the dynamics of the problem, and to tackle it at its source. Kemira  $\text{H}_2\text{S}$ -Guard was built on this understanding and prevents the problem before it has had time to develop.



## Fighting corrosion prevents infrastructure failure

Hydrogen sulfide leads to corrosion of wastewater systems made of concrete.

When sulfide-oxidizing bacteria find themselves in favorable conditions, they gradually start to convert hydrogen sulfide into sulfuric acid. These bacteria thrive in high relative humidity and on the presence of atmospheric oxygen - a condition unfortunately often found in wastewater conduits.

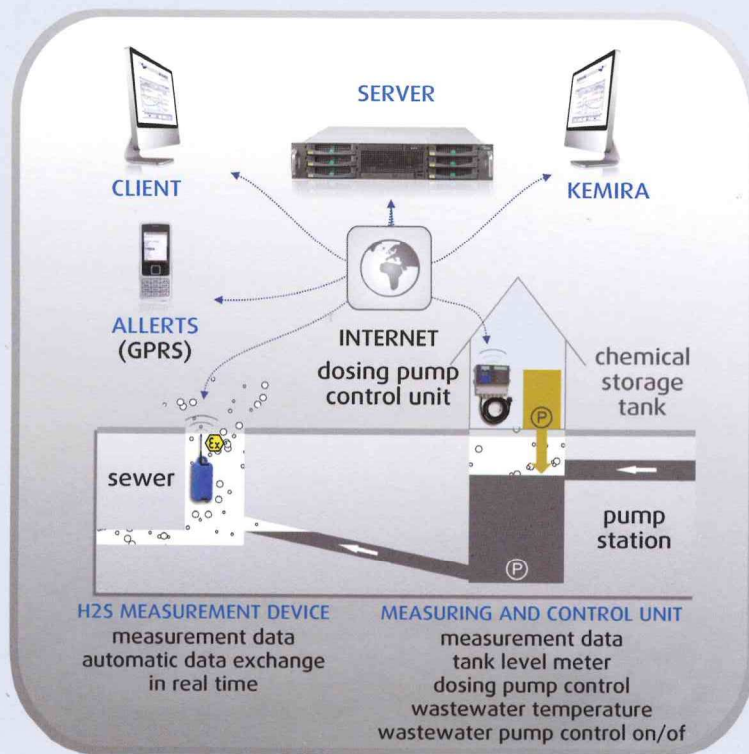
Sulfuric acid attacks the calcium compounds present in concrete to form gypsum or ettringite respectively. These expansive products increase the internal pressure within the concrete, which results in the formation of small cracks that at worst cause significant corrosion. The consequences can be severe: wastewater leakage, and contaminated fresh water and soil. Repairing the damage is expensive, often complicated, and hazardous.

Kemira H<sub>2</sub>S-Guard combats corrosion by collecting information from the sewage system and automatically initiating counter-measures.





## H<sub>2</sub>S-Guard automates hydrogen sulfide control



Kemira H<sub>2</sub>S-Guard is a complete system package that allows you to efficiently fight the harmful effects of hydrogen sulfide buildup.

It includes all the components needed:

- equipment
- chemicals
- installation
- wireless alerts
- web access to real-time measurement data
- service and maintenance
- personnel training and education

All communication takes place fully automatically via the internet. Node data is delivered over GPRS modems at every sensor unit. You can view the status of your entire network - down to each individual sensor point - on your computer screen and on your cell phone.

Kemira H<sub>2</sub>S-Guard optimizes the entire wastewater treatment process, and automatically takes corrective action based on what it sees happening in the network. The entire data volume is saved at a central server for a minimum of twenty years to allow long-term analysis and fact-based development decisions.

## Customizable to your individual needs

H<sub>2</sub>S-Guard, like all key technologies we have developed, is based on getting to know our customers and their needs, while at the same time taking into account efficiency improvements, cost reductions, and environmental sustainability.

To get started, we will first analyze your situation thoroughly and prepare system specifications. Then we deliver the system components, install the system and train your operating personnel. When the system is up and running, we take responsibility for its flawless operation and provide you with 24/7 access to all data collected by the system. If you do not need a full system, we can provide you with just the necessary components.

Kemira H<sub>2</sub>S-Guard is an easy, efficient, comprehensive and customizable way to control your odor and corrosion problems.

For more information about Kemira H<sub>2</sub>S-Guard, please contact your local Kemira representative or send an e-mail to [h2sguard@kemira.com](mailto:h2sguard@kemira.com).







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Kemira H<sub>2</sub>S™-Guard is a trademark of Kemira Oyj

### Kemira in brief

Kemira is a global two billion euro chemicals company that is focused on serving customers in water-intensive industries. The company offers water quality and quantity management that improves customers' energy, water, and raw material efficiency. Kemira's goal is to be a leading water chemistry company.

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