

Application report

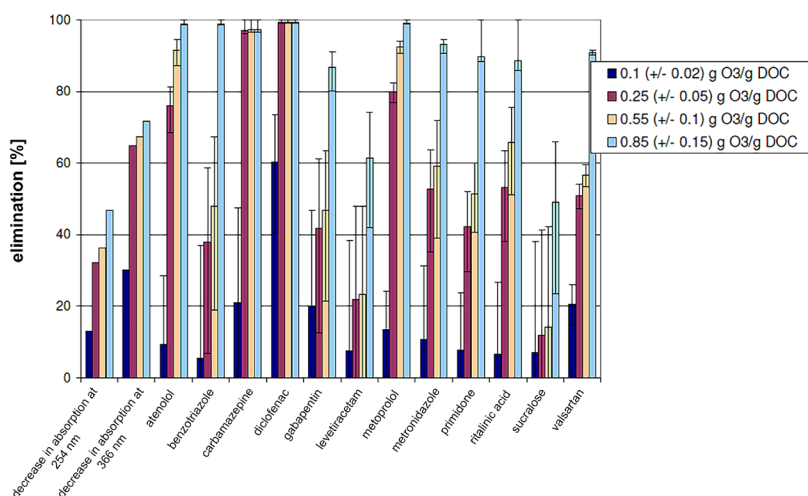
Elimination of micropollutants (4th clarification stage)

Not only the consumption and use of various pharmaceuticals, detergents and pesticides, but also cosmetics such as shower lotions, shampoos and comparable products has increased substantially in recent decades. These substances of the group of micropollutants or trace substances are only partially or not at all biologically degraded in water treatment plants and can only minimally sorb to sewage sludge. The elimination capacity or the retention of these trace materials is therefore only poor or insufficient.

Elimination of these trace materials can be achieved by two processes: the use of ozone to oxidize the substances or of activated carbon powder (PAC) to adsorb and subsequently filter those substances. There are advantages and disadvantages to both methods.

Based on the experiences and examinations made in previous years, a practical test using ozone in a pilot plant was carried out at the eawag in Dübendorf in 2011/2012. Elimination was verified. At the same time, control of the process was determined which guarantees optimal ozonation. A reliable control is desirable to keep energy consumption at its minimum.

The basic idea: to measure the difference in absorbance before and after ozonation using photometers.



Pict. 1 List of micropollutants in waste water of the waste water treatment plant ARA Dübendorf (Source: eawag)

The list of trace materials in waste water is long. Matters are further complicated by the fact that their composition varies with each kind of waste water. Categorization exists in European countries and a Switzerland specific list of micropollutants is derived thereof.

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Complete system for measuring UV absorbance (254nm) with automatic cleaning

SIGRIST-PHOTOMETER AG offers a complete system consisting of:

- 2 absorption measuring instruments ColorPlus 2 Bypass
- system for automatic cleaning of the flow cell with compressed air and detergents



Technical data

Device

Measuring principle:	Absorption
Wave length UV lamp:	254nm
Measuring span:	0 .. 3 E
Resolution:	0.001 E
Measuring ranges:	8, freely configurable
Ambient temperature:	-10.. + 50 °C
Enclosure material:	Stainless steel 1.4301
Protection degree:	IP 65
Power supply:	100..240 VAC, 47..63 Hz, 35 W (70 W peak power)

Flow cell

Material:	PVC 100mm
Window material:	Quarz (UV)
Seals:	EPDM
Sample Temperature:	0 .. 40 °C
Sample pressure:	400 kPa (4 bar)
Sample flow:	min 1 l/min
Compressed air supply:	200 .. 350 kPa (2..3.5 bar)

Control unit SICON M

Display:	1/4 VGA, 3.5"
Operation:	Touchscreen
Outputs:	4 x 0/4..20mA, galv.separated, 7 x digital
Inputs:	5 x digital, freely configurable
Digital interfaces:	Ethernet, microSD card, Modbus TCP
Optional interfaces:	Profibus DP, Modbus RTU, HART

Advantages of the SIGRIST complete system

Customer benefits

- The elimination of micropollutants is precisely measured before and after ozonation.
- Controlling the ozone plant to achieve a low energy consumption.
- Automatic cleaning of the flow cells prolongs the cleaning intervals.
 - Maintenance is considerably reduced.
 - The whole plant can be operated for a longer period without the need to stop the plant.

 **SIGRIST**
PROCESS-PHOTOMETER

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