INTRODUCTION
The amount of pollutants brought into the swimming pool water by swimmers is called anthropogenic pollutant release. The continual pollutant release is the amount of pollutants which is released during the submerged swimming period. The actual level of the continual pollutant release has not been studied individually up till now.

OBJECTIVE
The objective of this study was to define and quantify the individual continual pollutant release both chemically and microbiologically at different swimming pool conditions and different levels of exercise.

METHODOLOGY
The continual release was studied with a standardized exercise during controlled time-series laboratory experiments according to following protocol:

- Pre-swim shower, drying with a towel and weighing on a balance.
- Dress in a waterproof suite prepared for water recirculation.
- Entering pool tank and filling suite with 25L non-chlorinated tap water.
- 10 minute rest period followed by a 30 minute exercise on Aqua-Nordic-Walker.
- Recirculation of suite water during experiment and sampling each 5 minutes.
- Undress from suite and collect all remaining water from suite.
- “After-shower”, drying with a towel and weighing on a balance again.

Samples were analysed for:

- Total organic carbon (NPOC), UV254 and total nitrogen (TN).
- Urea, Ammonium, Nitrate, Turbidity and Particle count.
- Total cell count and intra cellular ATP.

Sweat production was calculated from the balancing results. The experiments were performed with 4 participants, 2 female and 2 male at different temperatures (25, 30 and 35°C) for each participant.

RESULTS
The results of the time-series experiments show a normalized sweat release of 0.06-0.66 L per m² body surface area per subject, figure 2. At higher pool water temperature the normalized sweat release increases. There was no clear difference between female and male subjects.

Besides temperature also exercise level is an important parameter, figure 3. The exercise level is expressed in maximum oxygen uptake (% VO₂ max).

Based on these results (fig 3) and literature results (fig 4) the anthropogenic pollutant release can be dived in two parts. Till an exercise level of 60% VO₂ max the normalized sweat release is more or less constant. At higher exercise levels, the normalized sweat release increases. Finally, also the duration of the exercise has an effect on anthropogenic release. The longer you stay in the pool water, the higher your anthropogenic release will be.

CONCLUSION
The anthropogenic release is increased when:

- Pool water temperature increases
- Duration of the exercise increases
- Exercise level increases
- Normalized sweat release happens in two phases. Anthropogenic release is constant till a threshold of 60% VO₂ max is reached, thereafter the release increases.