



## ETH Medal for Barbara Jeanne Ward

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Topics: Wastewater | Water & Development

**Barbara Jeanne “BJ” Ward received the ETH Medal for her doctoral thesis on predicting the dewatering capacity of faecal sludge in mid-July. The medal honours excellent master and doctoral theses at ETH Zurich each year.**

More than a third of the world’s population depends on non-sewered sanitation systems for their sanitation needs. Improved options for managing the faecal sludge produced in these systems are urgently needed, since most of this sludge is currently released untreated into the urban environment. This represents an enormous strain on public health and the environment.

Clear predictions are required

Where faecal sludge treatment plants exist, the solid-liquid separation treatment step is currently unreliable. The external fluctuations in the composition of the inflowing faecal sludge cause problems in deposition and dewatering. This, in turn, reduces the capacity of the wastewater treatment plants. Current knowledge on solid-liquid separation is mainly based on observations on site as well as experience from other sectors. As a result, many of the few existing faecal sludge treatment plants do not work.

The factors that determine solid-liquid separation need to be understood in order to develop robust and reliable treatment solutions for faecal sludge. This is precisely what BJ Ward did in her doctoral thesis at the aquatic research institute Eawag, where she developed a conceptual model for the dewatering performance of faecal sludge. Based on this research, she identified metrics that allow predictions to be made about the properties of the faecal sludge and the dewatering capacity. Furthermore, BJ Ward developed predictive models and an app, which can predict the dewatering capacity of the sludge flowing into the faecal sludge treatment plant, based on photographs and probe measurements.

## Bringing research and practice together

The award-winning doctoral thesis was supervised by Linda Strande, group leader in the Sanitation, Water and Solid Waste for Development Department and Eberhard Morgenroth, professor for process engineering in urban water management at the ETH. According to Strande, the tools developed by Ward will have a far-reaching impact on faecal sludge treatment and advance the sector towards achieving the Sustainable Development Goals (SDG 6). “BJ Ward performed excellent work here as she always considered fundamental research questions with a view to the applications and practice,” explains Strande.

Ward meanwhile works as a water/wastewater engineer at HDR Engineering in Virginia, USA, where she is involved in designing innovative wastewater and water treatment technologies. “It is a great honour to receive this award and I believe it reflects the fantastic team of people at Eawag who made my doctoral thesis possible,” comments the new ETH Medal winner. “It is motivating to see that the importance of sanitation research is increasingly being recognised in the search for solutions for urban, non-sewered areas.”

Cover picture: Eawag researcher BJ Ward was awarded the ETH Medal for her doctoral thesis. (Photo: BJ Ward)

## Related Links

Project page Dewatering

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