

ELIMINATION POTENTIAL OF HAZARDOUS SUBSTANCES IN MUNICIPAL WASTEWATER TREATMENT PLANTS

Petra SCHNEIDER¹, Nicole GOTTSCHALK¹, Thomas GÜNTHER²,
Daniel ZÄNDER²

Abstract. *Having in view the requirements of the EU Water Framework Directive it is necessary to plan future measures for water protection, taking into account the origin and the reduction potential for the hazardous substances of concern. As part of the investigations, elimination tests according to DIN EN ISO 11733 were conducted. A special focus was directed to simulate conditions in the laboratory, reflecting the fate of hazardous substances during the full scale wastewater treatment. The focus of the investigation was put on industrial substances, hormone active substances, pharmaceuticals, volatile halogenated hydrocarbons, cyanides, and organotin substances.*

Key words: *activated sludge process, priority pollutants, elimination*

Introduction

Saxony, one of the new federal states in Germany, has done investigations for the implementation of the EU Water Framework Directive (WFD) on river basin scale. Hazardous substances determining the implementation of the Saxon River Pollution Mitigation Regulation (SächsGewVVO) and the Saxon WFD Regulation (SächsWRRLVO) which were detected in the outflow of Saxon municipal sewage plants, potentially affect the water quality. In order to plan future water protection measures on river basin scale, the knowledge of the origin and the potential for the reduction of the concentrations of the hazardous substances is necessary. Therefore the following focal points were examined:

- Study of the origin and the elimination of those hazardous substances,
- Development of a method for the experimental investigation of the elimination rate for hazardous substances as part of the biological wastewater treatment. The laboratory method was verified using the endocrine disruptor substance nonylphenol,
- Application of the developed method to determine the elimination rate for the following substance groups: industrial substances, hormone active substances, pharmaceuticals, volatile halogenated hydrocarbons, cyanides, and organotins.

The requirement of a good status of surface-, ground-, estuarial and coastal waters, aspired by the EU Water Framework Directive (Directive 2000/60/EG)

¹ C&E Consulting und Engineering GmbH, Jagdschänkenstraße 52, D-09117 Chemnitz, Germany, e-mail: petra_shneider@yahoo.com

² Eurofins Umwelt Ost GmbH, Löbstedter Straße 78, D-07749 Jena, Germany