

Pilot plant for microbial leachate treatment

C&E · Consulting und
Engineering GmbH



D-09117 Chemnitz • Jagdschänkenstraße 52
Tel.: +49 (0) 371 881 4228 • Fax: +49 (0) 371 881 4311
E-mail: info@cue-chemnitz.de
Internet: www.cue-chemnitz.de

Objective: Minimization of acute fish toxicity into the leachate

Location: Landfill Lumpicht, Aue

Client: Regional Waste Management Centre Southwest Saxony
Beneficiary: Regional Waste Management Centre Southwest Saxony

Year: 1999 - 2000

Initial Situation: The leachate of landfill Lumpicht is heavily contaminated with ammonium. Because of the high concentration the fish toxicity in the water is very high and it can not be led into the receiving stream. Thus the leachate must be treated.

Services Provided:

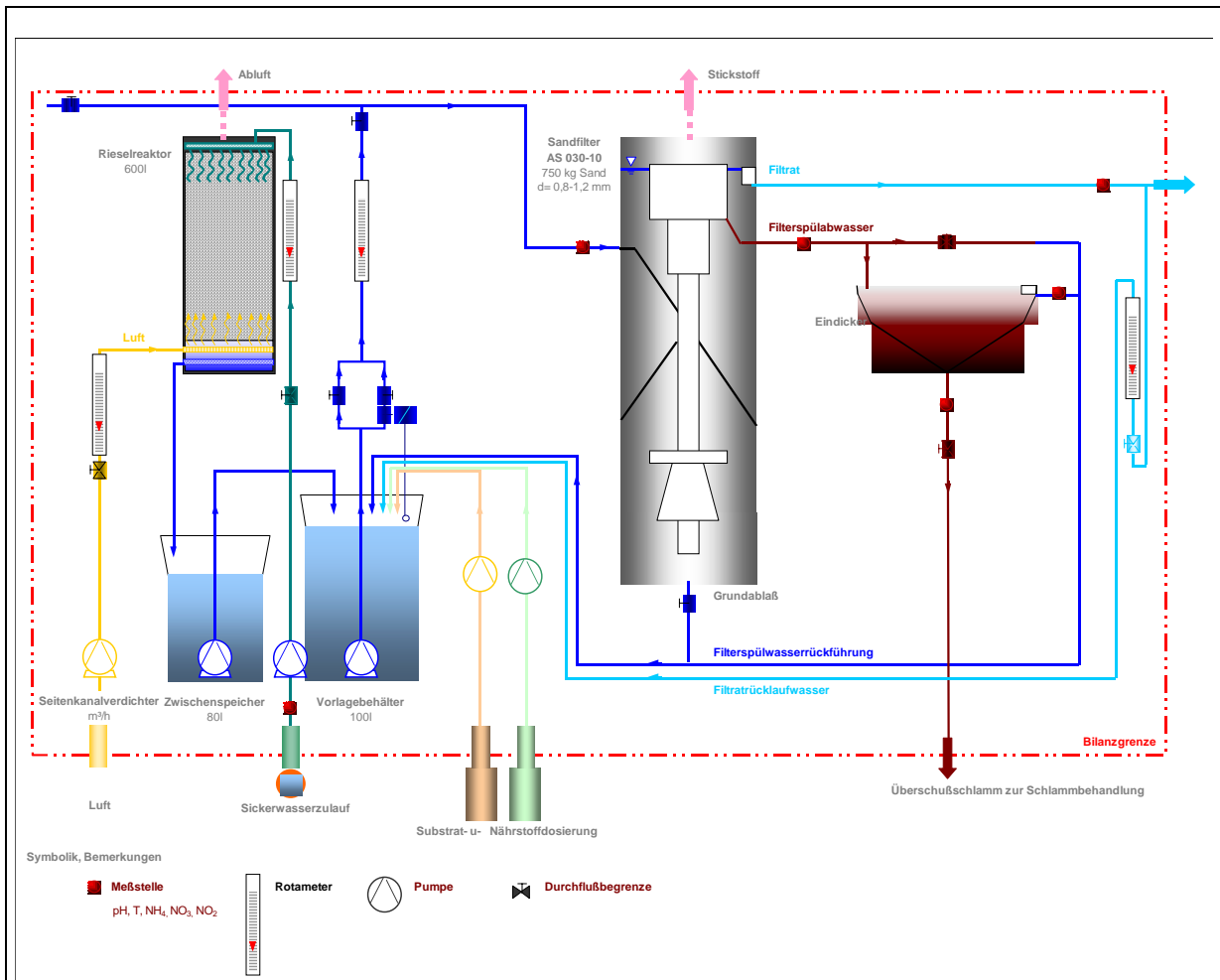
- Determination of cause of fish toxicity showed, that only the very high amount of the ammonium concentration results this toxicity.
- Implementation of the laboratory tests to reduce the ammonium concentration by the microbial processes.
- Determination of process parameter, retention time, temperature etc.
- Selection of a suitable C-source
- Development and construction of a two-stages pilot plant, nitrification (trickle filter) and denitrification (dynamic sand filter)
- Tests on site to nitrification of ammonium and denitrification of nitrate

Pilot plant for microbial leachate treatment

C&E · Consulting und
Engineering GmbH



D-09117 Chemnitz • Jagdschänkenstraße 52
Tel.: +49 (0) 371 881 4228 • Fax: +49 (0) 371 881 4311
E-mail: info@cue-chemnitz.de
Internet: www.cue-chemnitz.de



Pilot plant for the removal of ammonium and nitrate from the leachate

Results:

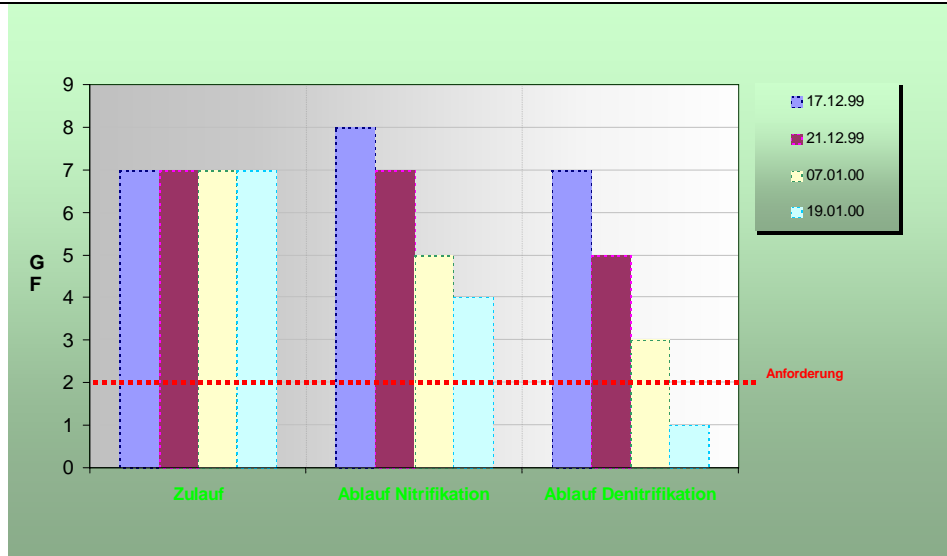
- Complete NO_2 removal during the test
- Technical methanol was used as a C-source
- Total nitrogen elimination in the treated water was more than 70 %
- The target value of fish toxicity of $\text{GF} = 1$ was reached
- Concept for the technical realisation for the existing volume flow was developed

Pilot plant for microbial leachate treatment

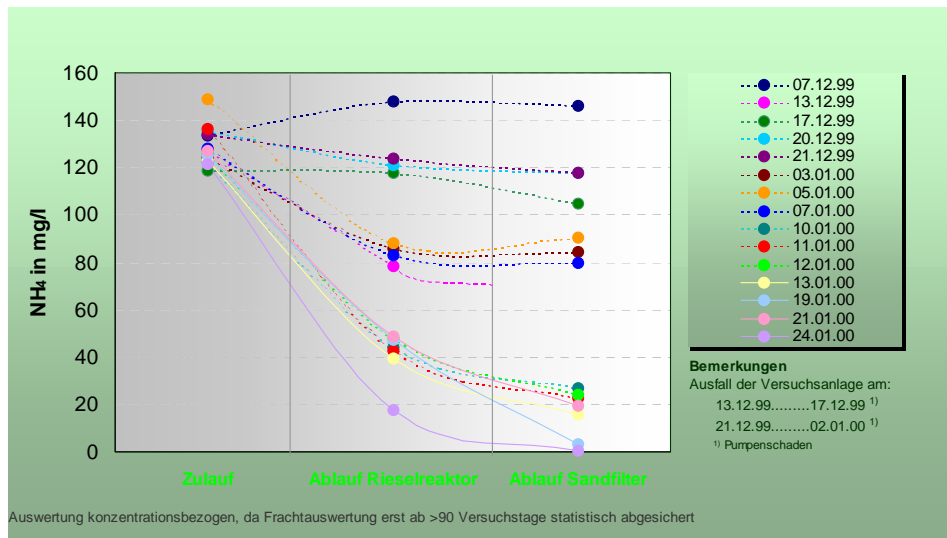
C&E · Consulting und Engineering GmbH



D-09117 Chemnitz • Jagdschänkenstraße 52
 Tel.: +49 (0) 371 881 4228 • Fax: +49 (0) 371 881 4311
 E-mail: info@cue-chemnitz.de
 Internet: www.cue-chemnitz.de



Minimization of fish toxicity (GF-value) over the test periods



Bemerkungen
 Ausfall der Versuchsanlage am:
 13.12.99.....17.12.99 ¹⁾
 21.12.99.....02.01.00 ¹⁾
¹⁾ Pumpenschaden

Auswertung konzentrationsbezogen, da Frachtauswertung erst ab >90 Versuchstage statistisch abgesichert

Course of NH₄ concentration over the test periods