

Oxidation products study

Ozonisation of WWTP-effluent



Rijkswaterstaat
Ministry of Infrastructure
and Water Management

Literature study on oxidation products

Study

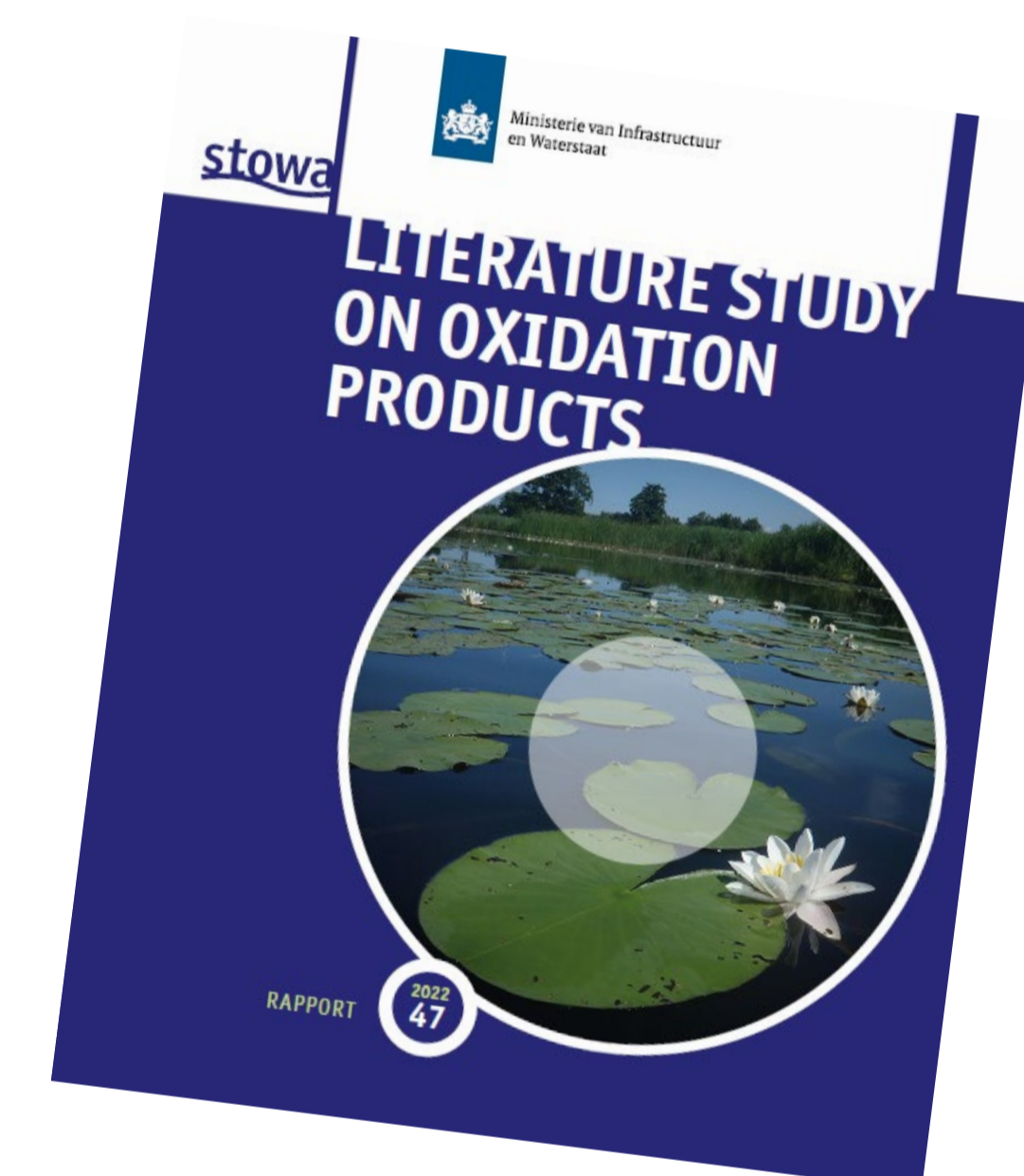
- International guidance committee
 - EAWAG, RIVM, KWR
 - Drink- & Wastewater experience
- Scope: ozonisation

Topics

- Identification oxidation products
- Effects of water matrix
- Influence of process design
- Net-effect of oxidation
- Knowledge Gaps

Outcomes

- Bromate most relevant oxidation product in NL
- Water matrix affects oxidation product formation
 - Multiple factors, e.g. not only bromide concentration
- Oxidation products far less toxic compared to micropollutants (parent compounds)
- Reduction of ecotoxicity on almost all ecotoxicological tests (bioassays)
 - Exception possible in case of specific industrial wastewater
- Post-treatment (sand filter) not necessarily required
 - No clear added value



Technical guideline on oxidation products

Guideline

- Practical tool for Water Authorities
- Three-step assessment process
 - Per step: Why > Goals > Action > Evaluation (Go / No-Go)

Steps

- Monitoring campaign wastewater
 - Which compounds are present
 - Possible source control (e.g. specific industry)
- Lab testing
 - Insight in potential performance
 - Snapshot (one / few samples)
- Pilot testing
 - Relevant conditions for practice
 - Assess effectivity of ozonisation
 - Determine degree of possible negative effects (bioassays)

Monitoring campaign



Lab testing



Pilot testing



Full-scale

