

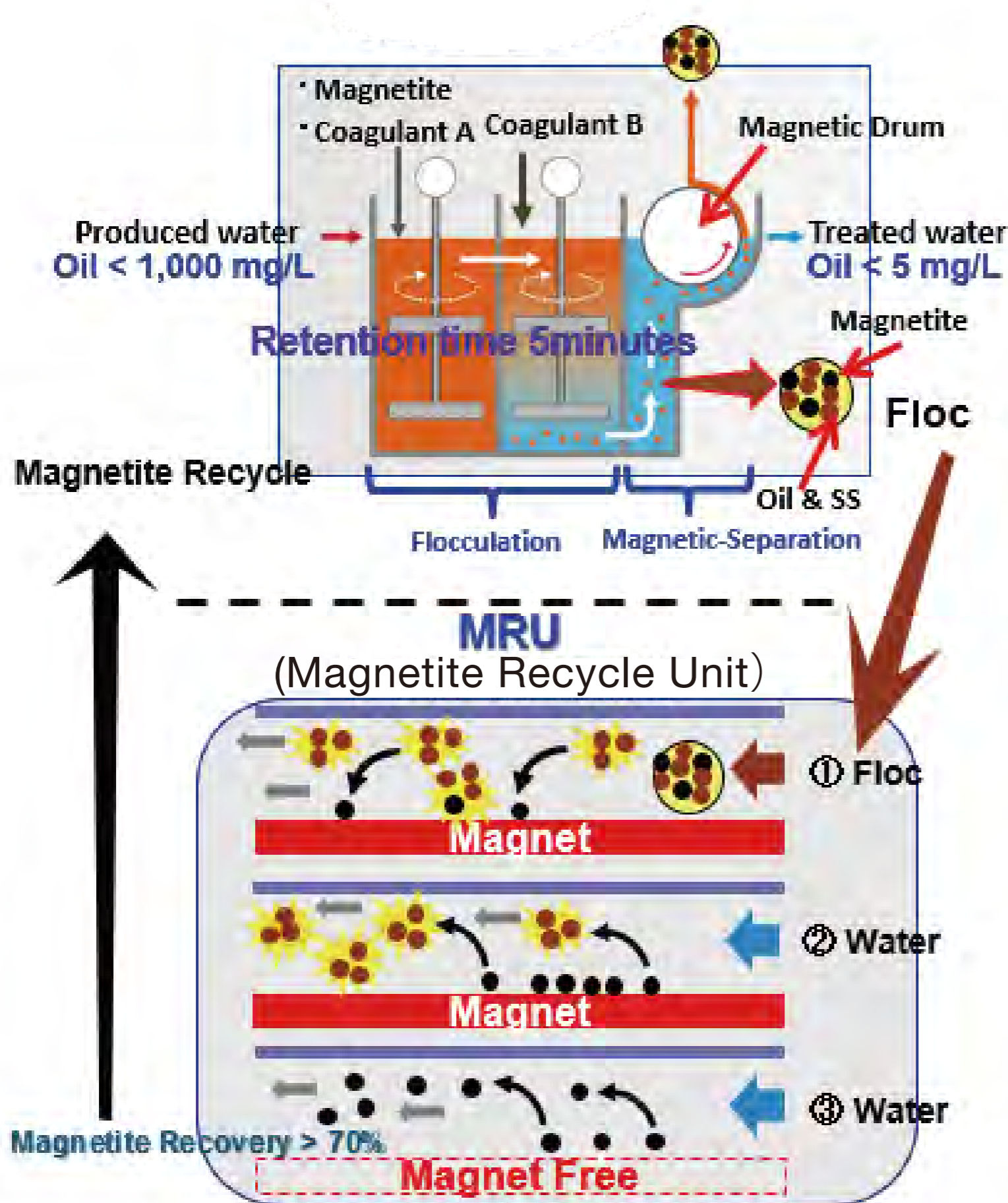
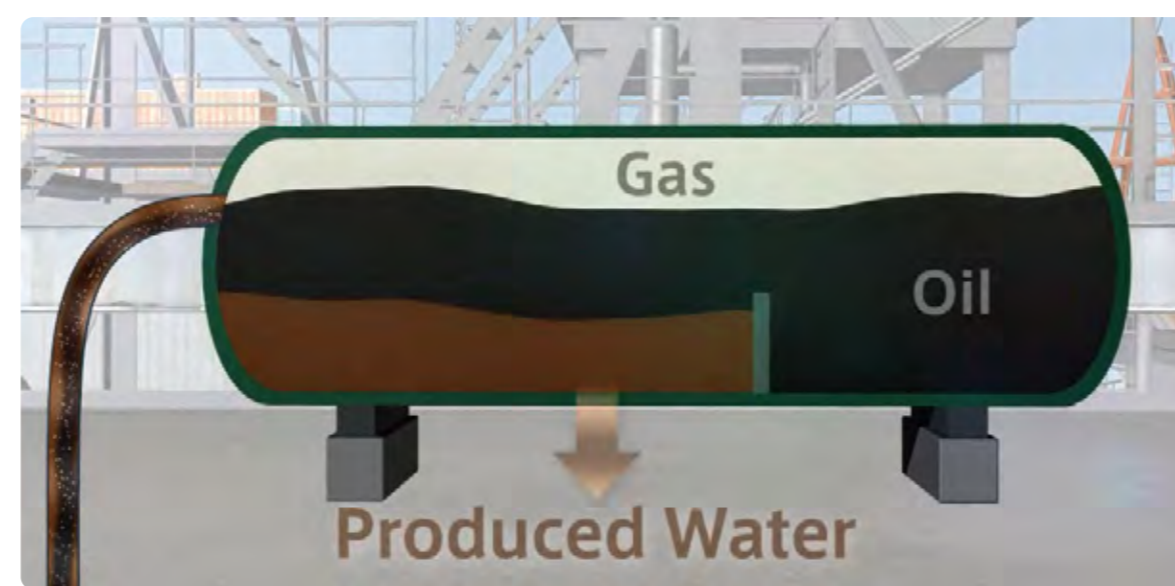
Environmental Friendly Produced Water Treatment Technology

I. Produced Water

FMS+MRU produced water treatment system

JOGMEC – Hitachi, Ltd.

FMS (Flocculation and Magnetic-Separation)

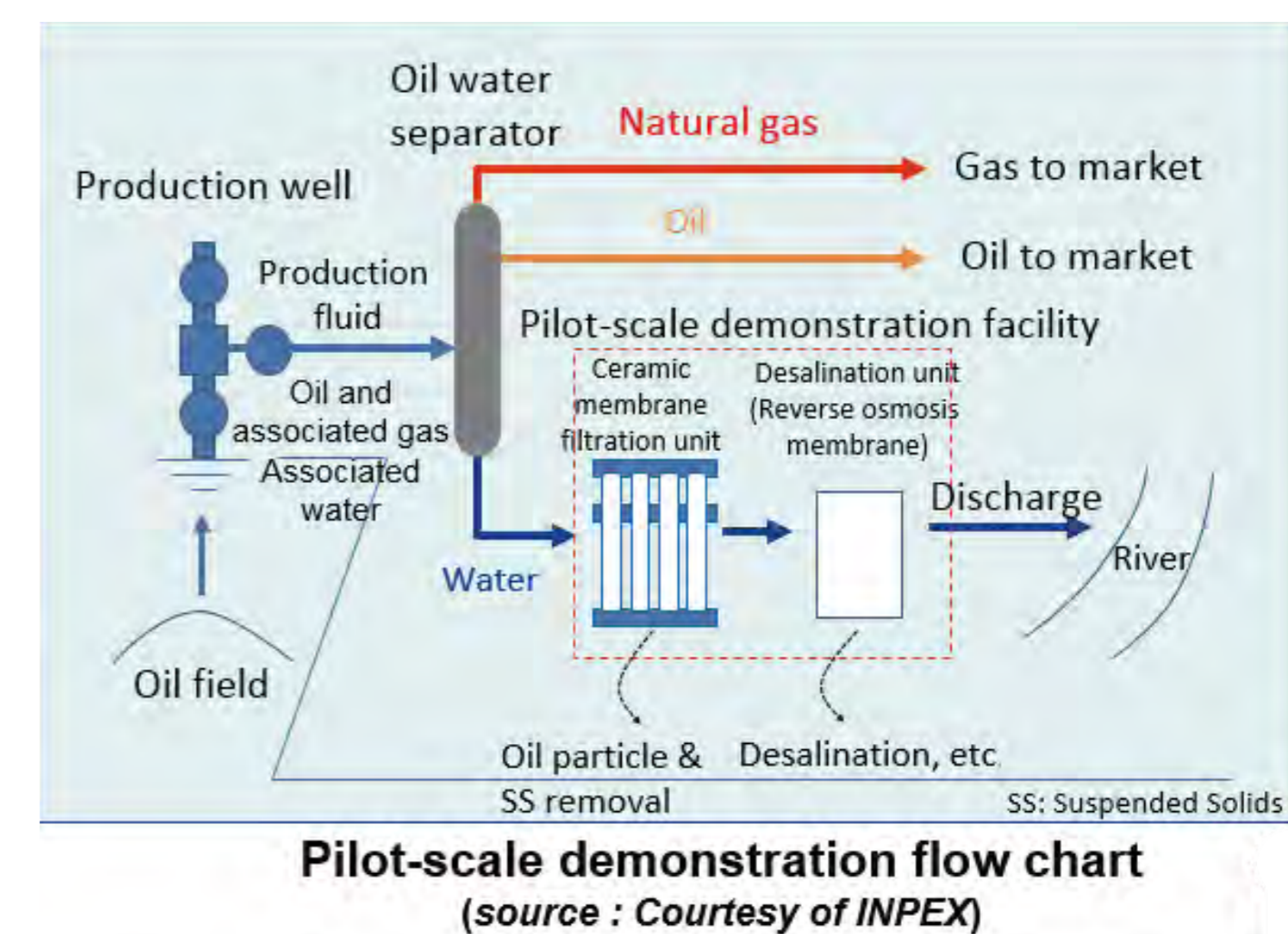


II. Removal of Oil & Solid

Ceramic Membrane- based produced water treatment technology

JOGMEC – INPEX Corporation / Chiyoda Corporation / METAWATER Co., Ltd.

Removal of suspended solids and oil from produced water using ceramic membrane



IV. Decomposition of Water Soluble Organic Compounds using Plasma

JOGMEC – KUMAMOTO UNIVERSITY

Nano-seconds Pulsed discharge plasma

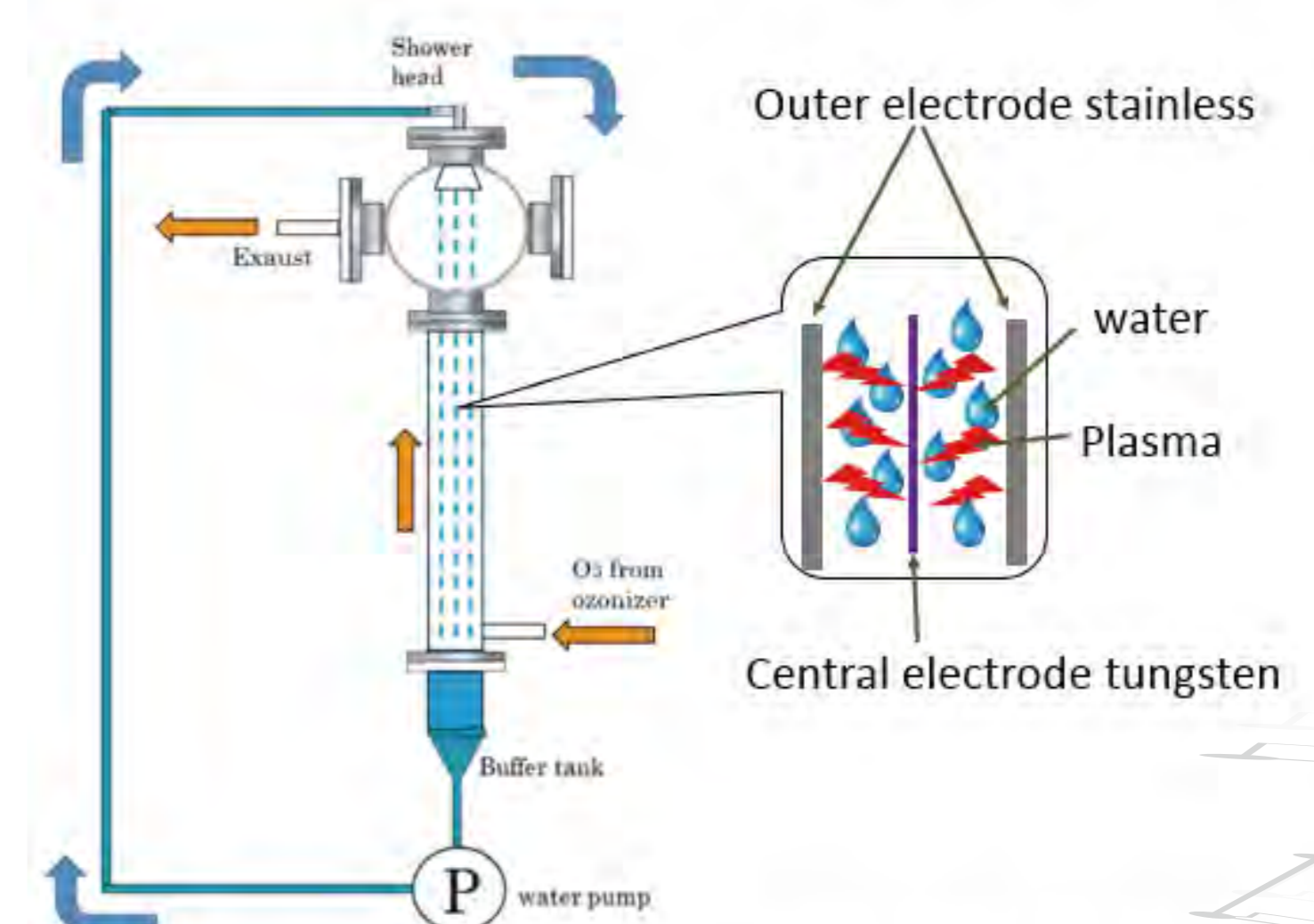


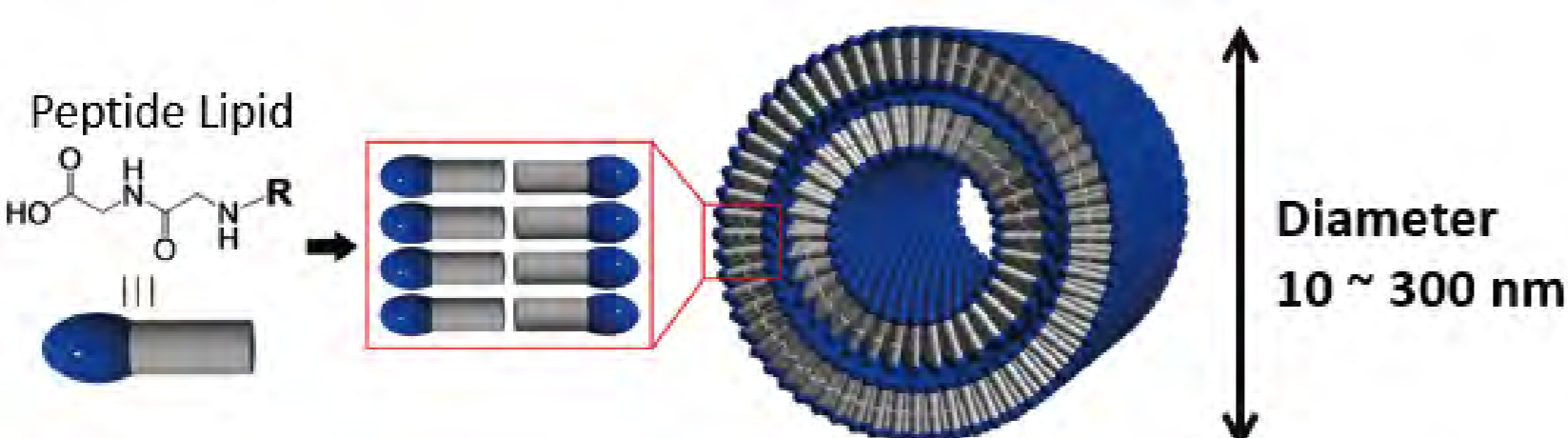
Fig. Nano-seconds pulsed discharge plasma water treatment flow (source: Courtesy of KUMAMOTO University)

III. Removal of Heavy Metals and Water Soluble Organic Compounds

Self-Assembled Organic Nanotubes (ONTs)

JOGMEC – AIST

(Advanced Industrial Science and Technology)



ONTs adsorb almost chemical components like oil, heavy metals and water soluble organic compounds.

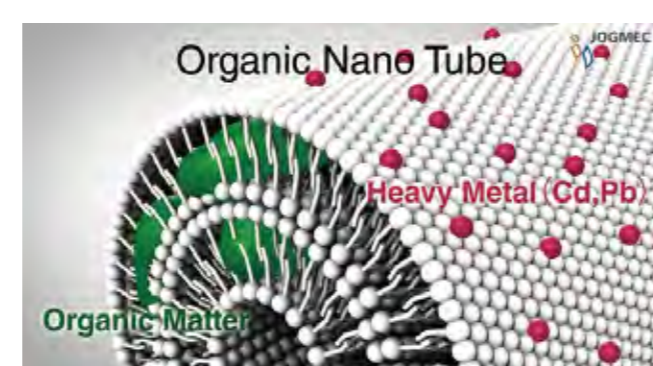


Table Test Results using a produced water

(ppm)	Phenol	PAHs	Cd ²⁺	Pb ²⁺
Produced water	15.1	< 0.01	1.0	0.61
ONTs	18.6	< 0.01	< 0.01	< 0.01
Activated Carbon	0.025	< 0.01	0.02	0.01
Chelating resin	15.5	< 0.01	0.04	0.03

Water Circulation and Re-Use

Test Results

- TOC Reduction 484 mg/L to 34.4 mg/L (Reaction time 6hrs)
- Decomposition rate 92.9%
- Decomposition efficiency 0.135 gTOC/kwh

For further information

tech_solution@jogmec.go.jp