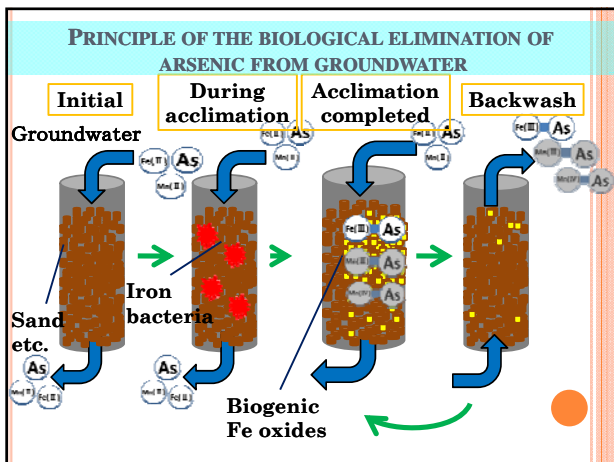
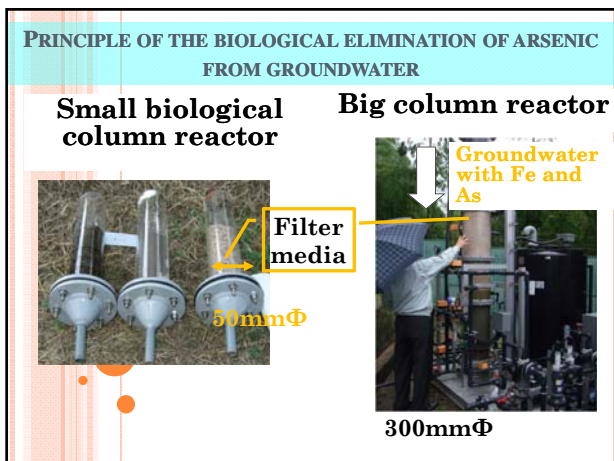


A 6 - YEAR PILOT STUDY OF THE BIOLOGICAL FILTRATION FOR LOW-COST ARSENIC REMOVAL

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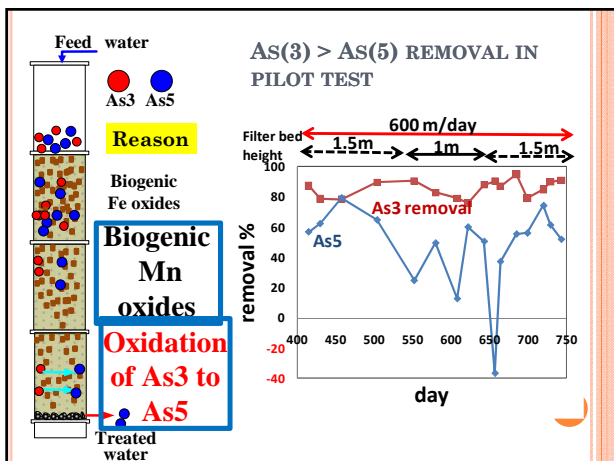


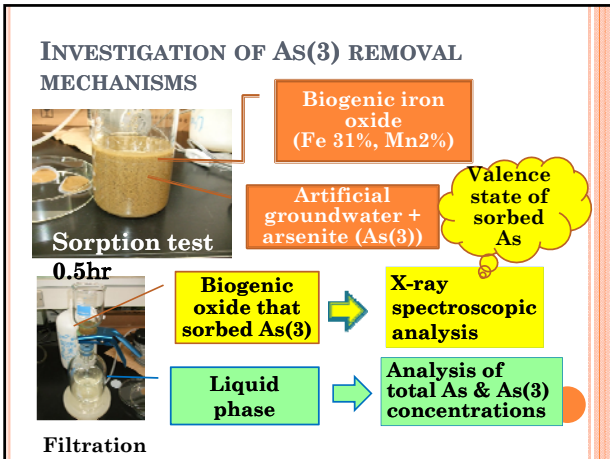
ANALYTICAL METHODS

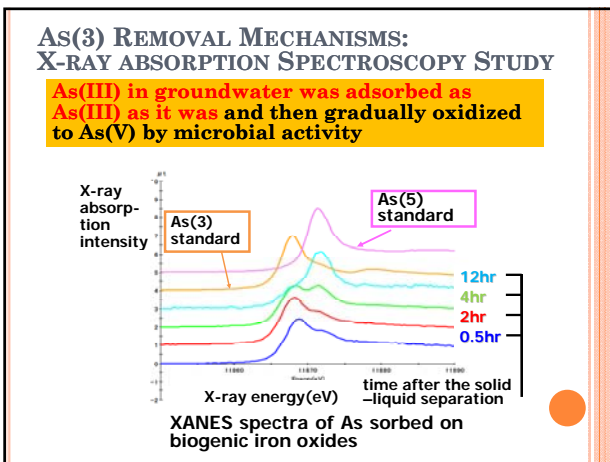
- Total As conc.: **Hydride generation AAS**
- As(3) in water: **Anodic stripping voltammetry**
- Fe, Mn conc. : **ICP-AES**
- Fe²⁺: **colorimetry**
- NH₄-N: **Distillation + colorimetry**
- DO, pH, EC, ORP: **electrochemical testers**
- As, Fe and Mn speciation in solid phase: **X-ray absorption spectroscopy (XANES and EXAFS)**

THE EFFECT OF OPERATING VARIABLES

Run	removal		Feed water storage	m/d	Aeration	operation	
	Fe	As				Filter	Filter height
1	45%	0%	5d	150	×	Plastic	
2	76%	72%	0d	150	×	Plastic	
3	96%	71%	0d	150	○	Plastic	
4	86%	89%	0d	300	○	+sand	
5	98%	76%	0d	600	○		1.5m
6	97%	50%	0d	150	○	Plastic +zeolite	
7	95%	74%	0d	150	○	sand	
8	97%	71%	0d	600	○	sand	
9	98%	66%	0d	600	○	sand	1.0m







- ### SUMMARY OF THE 6-YEAR- PILOT STUDY
- The simultaneous removal of Fe, Mn, As and NH_4^+ by biological system was possible at LV 600 m/day. 高LV 同時除去
 - Both arsenate and arsenite can be removed without preoxidation. As3 As5同時除去
 - Feeding of fresh water that contains iron oxidizing bacteria and Fe^{2+} to the filter and periodical backwash are necessary to maintain the system. 2個鉄含有原水・定期逆洗
 - The biological system did not need the exchange of filter media. 不要濾過材交換
 - Filter bed height and LV did not affect As removal much. 濾材高・LV 除去率影響僅少
 - No treatment chemicals needed 無薬注
 - Usable as centralized as well as decentralized system 集中・分散型水処理
