

Item 4.2

IGSC Activities: Salt Club

Kristopher Kuhlman

Salt Club Chair, Sandia National Laboratories (SNL), USA



The 23rd Meeting of the IGSC
12-13 October 2021, Online



Salt Club Background

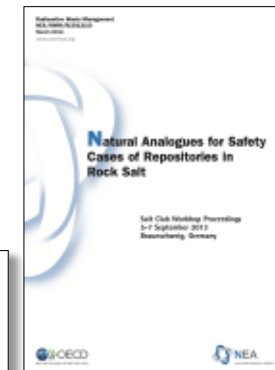
- Salt Club created in 2011 as IGSC sub-group
- Expert group on rock salt as a host rock for radwaste disposal
- Member Organizations (May 2021):
 - Germany: 9
 - The Netherlands: 2
 - Poland: 1
 - Romania: 1
 - United Kingdom: 1
 - United States: 4
- Salt Club chairs
 - Jörg Mönig 2011 – 2020
 - Kris Kuhlman since 2021

Salt Club Bureau Composition 2021

- Chair: Kris Kuhlman (SNL, United States)
- Vice-chair: Michael Bühler (KIT, Germany)
- Members:
 - Nina Müller-Hoeppe (BGE TECHNOLOGY, Germany)
 - Jacques Grupa (NRG, The Netherlands)
 - Jeroen Bartol (COVRA, The Netherlands)
 - Andrzej Chwas (ME, Poland)
 - Alice Ionescu (RATEN-ICN, Romania)
 - Amy Shelton (RWM, UK)
 - Timothy C. Gunter (US DOE/NE, USA)

Salt Club Publications

- 2013
Natural Analogues for Safety Cases of Repositories in Rock Salt - Salt Club Workshop Proceedings, 5-7 September 2013, Braunschweig, Germany [[NEA/RWM/R\(2013\)10](#)]
- 2014
Salt Reconsolidation Principles and Applications Prepared by the Salt Club [[NEA/RWM/R\(2014\)5](#)]
- 2018
Microbial Influence on the Performance of Subsurface, Salt-Based Radioactive Waste Repositories [[NEA No.7387](#)]
- 2020
Generic FEPs Catalogue and Salt Knowledge Archive [[SAND2020-13186](#)]



Associated Meetings

- International Workshop on Actinide Brine Chemistry in Salt (**ABC-Salt**)
 - Every-other year since 2010 between Germany & USA
 - No virtual meetings during COVID
 - Next meeting planned (tentatively) 2022 or 2023 in New Mexico, USA
- **US/German Workshop** on Salt Repository Research, Design and Operation
 - Every year since 2012, mostly Germany & USA (+ Netherlands)
 - No meeting 2020 due to COVID, 2021 virtual
 - Next meeting planned May 2022 in Braunschweig, Germany

Salt Club Plenary Meetings

Kick-off	Issy-les-Moulineaux, France	20 Apr. 2012
SC-1	Issy-les-Moulineaux, France	4 Dec. 2012
SC-2	*Berlin, Germany	16 Sep. 2013
SC-3	Issy-les-Moulineaux, France	18 Mar. 2014
SC-4	Issy-les-Moulineaux, France	25 Feb. 2015
SC-5	Boulogne-Billancourt, France	22 Mar. 2016
SC-6	*Washington DC, USA	6 Sep. 2016
SC-7	*Middelburg, The Netherlands	4 Sep. 2017
SC-8	*Hannover, Germany	7 Sep. 2018
SC-9	*Rapid City, USA	31 May 2019
SC-10	Virtual	8 Dec. 2020
SC-11	Virtual	11-12 May 2021
SC-12	*Braunschweig, Germany	9 May 2022

*co-convened
with US/German
Workshop

Plenary Meeting SC-11

- 11-12 May 2021 (Virtual Meeting)
- SC-11 Topics
 - 3.1: Microbial Activities in Saline Systems (Swanson, LANL, USA)
 - 3.2: ABC-Salt Workshop (Altmaier, KIT, Germany)
 - 3.3: US/German Workshop (Kuhlman, SNL, USA)
 - 3.4: Bedded vs. Domal Salt (Popp, IfG, Germany)
 - 3.5: Learning from failures in mines (Müller-Hoeppe, BGE TEC, Germany)
 - Technical Session: 5.0
 - Performance Assessment in Salt

SC-11 Technical Session on PA in Salt

- Actinide Pitzer Models to support PA in Salt (Reed, LANL, USA)
 - High-ionic strength brines difficult, additional database work needed
- Scenario Development and PA (Wolf, GRS, Germany)
 - Role of scenarios in safety case has changed, developing NEA report
- DECOVALEX Task F and RANGERS (Jayne, SNL, USA)
 - Simplified salt repository PA efforts: benchmarking & EBS design
- UK Halite Deposits (Norris, RWM, UK)
 - UK has several bedded halite deposits of varying depth / stratigraphy / data
- Status of Dutch PA (Bartol, COVRA, Netherlands)
 - DECOVALEX Task F is a useful comparison to explore PA assumptions

Ongoing Salt Club Work Activities

- FEP catalogue for salt repository + Salt Knowledge Archive
- Scenario development for salt repository
- State-of-the-art report on bedded vs. domal salt
- Geomechanical integrity evaluation of crushed salt (numerical + experimental)
- Thermodynamic aspects of brine chemistry
 1. Actinide and Brine Chemistry (ABC) Salt Workshops
 2. Joint International Pitzer Database (JIPD)
- Microbial gas generation in saline systems

Next Steps

- Planned SC-12 Meeting:
 - 9 May 2022
 - Braunschweig, Germany
 - Hotel Steigenberger
 - 12th US/German Workshop (10-13 May 2022)
- Salt Scenarios NEA Report
 - Report under development, bi-monthly meetings



Thank You