

## WP5 Webinar Summary

Webinar Date	March 30, 2021
Webinar Time	13:00 to 16:00 CET
Chair	Maxime Fournier
Prepared by	Maxime Fournier and Tim Schatz

### Background

The PREDIS project hosted a technical webinar (*Innovations in liquid organic waste treatment and conditioning*) on March 30, 2021. This webinar was focussed on the goals and objectives of work package 5 (WP5) and is the fourth in a series of technical webinars from the PREDIS project. Upcoming webinars ([register here](#)) will examine issues related to waste acceptance criteria (WP2). Previous webinars have addressed [cemented waste package monitoring and storage \(WP7\)](#), [metallic material treatment and conditioning \(WP4\)](#) and [solid organic waste treatment and conditioning \(WP6\)](#).

For their webinar, the WP5 leaders put together a program (see Appendix 1 for agenda) that consisted of four sessions of presentations by invited speakers and WP5 partners: an introductory session, a session on the disposability of radioactive organic liquids encapsulated in geopolymers and related materials, a session on the needs and challenges faced by waste owners with respect to liquid organic wastes (LOWs) and a final session on ongoing work and international guidance. The presentations in the introductory session covered the definitions of radioactive liquid organic wastes (RLOWs) and the applications of geopolymers. The second session provided examples regarding the development of waste acceptance criteria for geopolymer conditioned wastes and established practices for conditioning LOWs in cement matrices. The third session described finding treatment and conditioning schemes for challenging RLOWs. Formal presentations concluded with the fourth session which featured the goals, objectives and first outcomes of WP5 and IAEA's perspective on liquid organic waste management. The presentations are available on the PREDIS website (<https://predis-h2020.eu/wp5-webinar-30-3-2021/>).

Following the formal presentation sessions, a set of small group discussions were held. Attendees were randomly assigned to 1 of 4 moderated breakout rooms. The aim of the 30-minute discussion session was to gather end user (and broader) information on future objectives in liquid organic waste management, the gaps standing in the way of meeting those objectives and input on the technologies being developed in WP5.

In all, more than 200 participants registered to attend the webinar from 25 countries including some from outside Europe. Representation was divided between end user group members + general stakeholders and consortium partners at 58% to 42%.

One hour after the start of the webinar the number of attendees online was 124, and at the end of the webinar there were 70 attendees online.

Over the course of the webinar live-polling was conducted. Poll questions were intended to gauge feedback and opinions on the biggest challenges in the predisposal management of liquid organic waste and the primary focus of near-term R&D related to liquid organic waste treatment and conditioning.

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### Outcomes

Some key takeaways from the deliberations of the discussion sessions were as follows:

- ▣ Although RLOs are generally encountered in small quantities, they often require specialized treatment and conditioning schemes.
- ▣ The demonstration of compliance with waste acceptance criteria (WAC) for geopolymer conditioned wastes will require additional knowledge.
  - Immobilization of liquids in these matrices over disposal-relevant timescales must be demonstrated.
  - How do the geopolymer structures (e.g., secondary phase formation, changes in porosity) and entrapped liquids evolve over time?
- ▣ WAC compliance demonstration for geopolymer conditioned wastes could follow that adopted for vitrified wastes.
- ▣ Natural analogue evidence could be considered in WAC compliance demonstration.
- ▣ Ultimately, standards for geopolymer materials (used for waste conditioning) could be established to facilitate their acceptance in disposal facilities.
- ▣ Geopolymers appear to provide a significant increase in waste loading capacity compared to cement (at least for waste oil).
- ▣ Geopolymers might be a good possibility for conditioning reactive metal wastes as well.
- ▣ Geopolymers could be applied to cases or conditions where established cements are not performing suitably.
- ▣ The lower swelling potential of geopolymer matrices compared to cements should be an advantage.
- ▣ PREDIS can play a significant role in addressing the many open R&D issues around the use of geopolymers for RLO conditioning.

Live-polling indicated (see Appendix 2 for all live-polling results):

- ▶ The majority of respondents registered for the webinar to increase their general knowledge.
- ▶ The majority of respondents considered conditioning to be the biggest challenge in the predisposal management of liquid organic waste.
- ▶ The majority of respondents agreed that legacy wastes should be the primary focus of near-term R&D related to liquid organic waste treatment and conditioning.

Overall, the level of interest and satisfaction with the WP5 webinar was favourable. The webinar had a high retention rate (> 56%) to its close. Preliminary analyses of participant responses to a post-webinar survey also indicated a good level of satisfaction (average overall score of 4.5/5.0). Participants also reflected that the work of the PREDIS project complements end user activities.

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### Appendix 1. WP5 Webinar Agenda

#### Innovations in Liquid Organic Waste Treatment and Conditioning

##### Session 1: Introduction (13:00 to 13:30)

- Welcome (Erika Holt, VTT)
- Radioactive Liquid Organic Waste (RLOW) – which wastes are these? (Stephen Wickham, GSL)
- “World Practices” for Geopolymers and PREDIS challenges (John Provis, The University of Sheffield)

##### Session 2: Disposability of radioactive organic liquids encapsulated in geopolymers and related materials (13:30 to 14:10)

- Geopolymer matrices and waste acceptance criteria in France (Nathalie Texier Mandoki, ANDRA)
- Novel binders as waste form matrices (Erik Coppens, ONDRAF/NIRAS)
- Italian WAC policy and RLOW approaches (Federica Pancotti, SOGIN)

##### Session 3: Waste owner perspectives on needs and challenges (14:10 to 14:40)

- NOCHAR, a solution to answer organic liquid storage in France? (Marine Zilber, Orano)
- URENCO Nuclear Stewardship: Our challenges in organic liquid wastes (Richard Kipling, URENCO)
- The experience with geopolymer matrices in the Czech Republic (Radek Trtilek, ÚJV Řež)

##### Session 4: Ongoing work on geopolymers and guidance (14:40 to 15:00)

- Objectives and first achievements of PREDIS WP5 (Maxime Fournier, Federica Pancotti, Catherine Davy and David Lambertin)
- IAEA perspective on RLOW (Rebecca Robbins, IAEA)

##### Breakout Room Discussions (15:15 to 15:45)

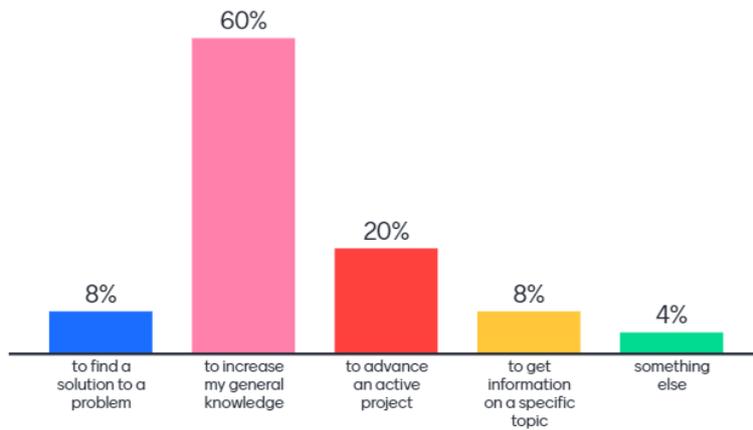
##### Feedback and Conclusions (15:45 to 16:00)

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### Appendix 2. Live-Polling Results

#### Why did you register for this webinar?

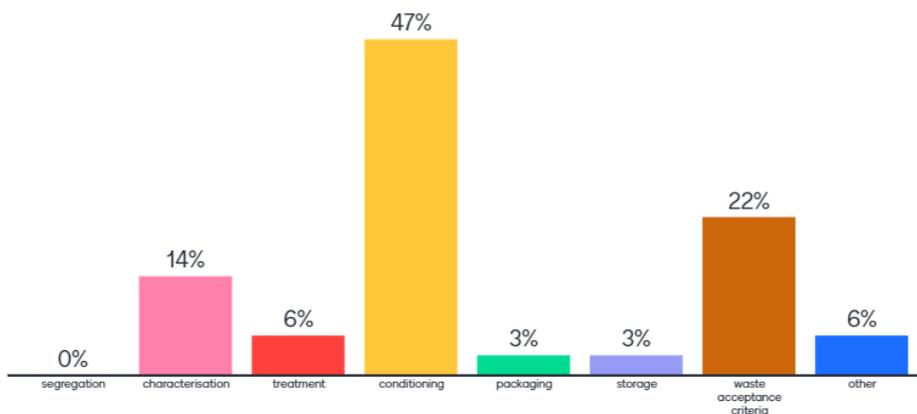
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#### What is the biggest challenge in the predisposal management of liquid organic waste?

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What should be the primary focus of near-term R&D related to liquid organic waste treatment and conditioning?

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