(Project Number: 945301)

DELIVERABLE D2.3

Final version of VR HoT package

Lead Beneficiary: JSI

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For the Lead Beneficiary	**Reviewed by Work package Leader**	**Approved by Coordinator**
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Dissemination Level		
PU	Public	**X**
RE	Restricted to a group specified by the Beneficiaries of the A-CINCH project	
CO	Confidential, only for Beneficiaries of the A-CINCH project	

Version control table

Version number	Date of issue	Author(s)	Brief description of changes made
1.0	28/07/2023	Marko Štrok	Draft
1.1	01/08/2023	Mojmír Němec	Coordinator's check and approval with the condition to update the VR Lab link
1.2	12/09/2023	Jana Peroutková	MST check, VR Lab link updated

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Project information

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EXECUTIVE SUMMARY

This report summarizes final version of the Virtual Reality Hands-on Training (VR HoT) package. It contains short summary of activities and exercises contained in the package, as well as a link where the final version is accessible. Virtual Hands-on Training package is aimed at fostering user experience and enhancing quality of radiochemistry education.

CONTENT

1 INTRODUCTION

In WP1 and WP2 the VR HoT package has been developed and can be accessed on this link: vrlab.cinch-project.eu. This package contains 5 activities and exercises. They are:

- Airlock entering
- Determine half-life from the mass of long-lived radionuclide
- Determination of Po-210 and Pb-210 in water samples
- Superficial decontamination, contamination conditioning and release of radioactive metallic waste
- Airlock leaving.

In addition to that, user can load free exploration mode where the user can freely explore radiochemistry laboratory environment and perform different tasks. The main screen of the application is shown in Figure 1 where user can start specific exercise or activity.

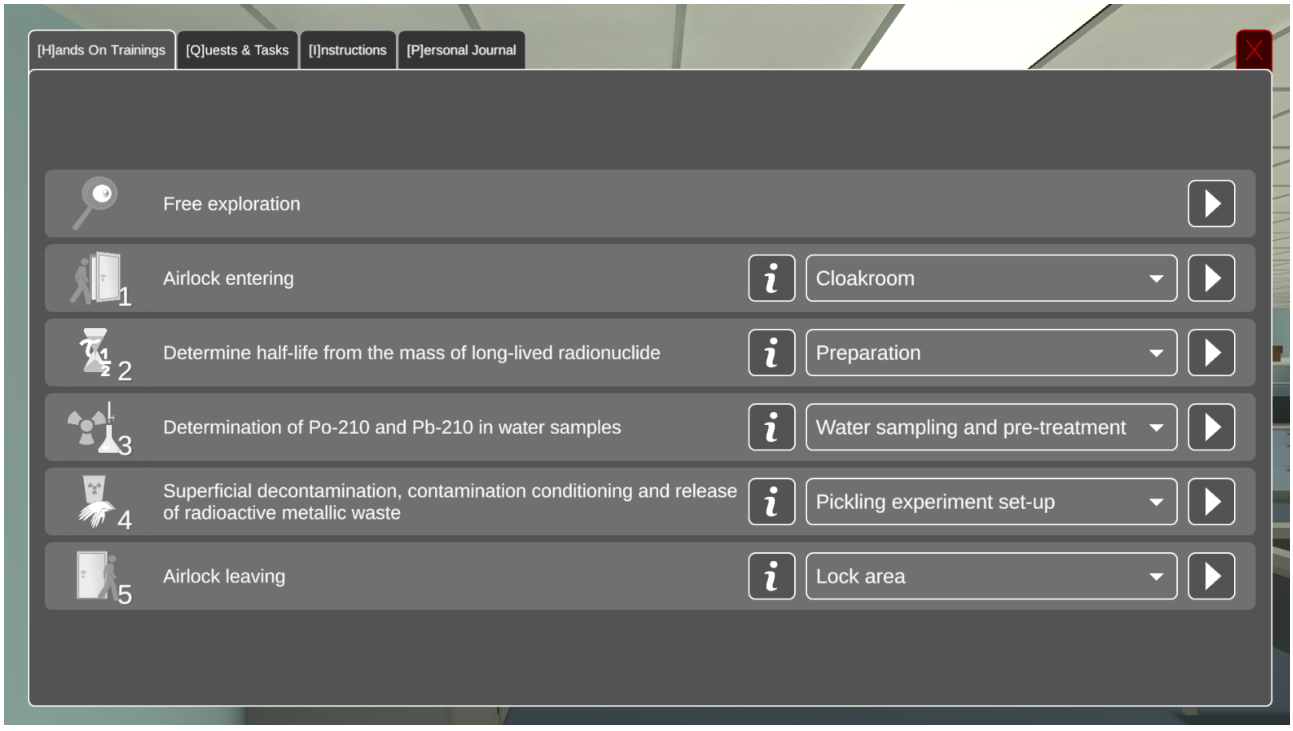

Figure 1: Main screen of VR HoT package

2 DESCRIPTION OF ACTIVITIES AND EXERCISES

2.1 Airlock entering

In this activity user gets familiar with all what is required before the user can safely work in radiochemistry laboratory control area.

2.2 Determine half-life from the mass of long-lived radionuclide

In this exercise the users should find the relationship between the half-life or the radionuclide and its quantity. This is completed by absolute determination of the activity of a sample after correction for attenuation.

2.3 Determination of Po-210 and Pb-210 in water samples

The users are tasked to conduct radiochemical analysis on water samples to determine Po-210 and Pb-210 activity concentration in water samples. Users prepare the water samples by filtration, acidification and preconcentration. Analytical radiochemistry separation techniques, such as extraction chromatography, are used to separate ions which are later precipitated. The radionuclides are analyzed using a proportional counter and alpha-particle spectrometer. Results are then calculated from the data.

2.4 Superficial decontamination, contamination conditioning and release of radioactive metallic waste

The users are required to perform the superficial decontamination of metal scraps as a part of a decontamination procedure whilst trying to minimize the production of secondary radioactive waste. The main four steps of the experiment are: the dissolution of the contaminated superficial layer of metallic scraps; the oxidation of the ferrous solution; the electrochemical precipitation of the contaminants present in the solution; the vitrification of the radioactive iron phosphate precipitate obtained.

2.5 Airlock leaving

This activity resembles tasks user needs to do to safely exit the radiochemistry laboratory control area. The users should undertake a contamination survey of themselves, record their received dose, and discard their personal protection equipment in designated areas.

3 CONCLUSION

VR HoT package has been created with combined efforts of WP1 and WP2 and is available on this link: vrlab.cinch-project.eu. It contains 5 activities and exercises, which will greatly enhance teaching experience in radiochemistry.