WM2011
Session 62
Training and HR Development in RWM

Petrus - programme, a coordinated European initiative to address industry needs for E&T in deep geological disposal

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Motivation to network

Ensuring the continuation, renewal and improvement of the professionals skills in the field of radioactive waste disposal needs **anticipation**

Suitable framework(s) and networks for implementing and delivering sustainable E&T programmes.

Promote the creation of a high quality European Training Market by pooling users and providers and by the division of work

- Smallness of the Radwaste management community and organisations working in the field (~3500-4000 specialists in Europe)
- Long duration of the nuclear waste management programmes and of the disposal projects (long operation times)
- Multidisciplinary
- Accumulation of scientific and technical knowledge that can be transferred also by education and training (E&T)
- Competition about experts and work force within the nuclear field (NPP new builders looking for thousands /ten thousands of new staff)
Towards "Euratom Fission Training Schemes" (EFTS) based on Public – Private Partnerships

EFTS proposed in Work Programme of Euratom FP-7 (2008)

- a significant development from a pure training and mobility programme to one dedicated rather to structuring research training across the EU
- target public = research workers and industrial experts at post-graduate or equivalent level, i.e. from doctoral students to senior visiting scientists.

Objectives:

- **address life-long learning and career development**, with emphasis on top-quality training, mutual recognition of internships and mobility
- **maximise transfer of higher level knowledge** with emphasis on multidisciplinarity and/or inter-sectoral mobility, through public – private partnerships
- **define a methodology for structuring research training** across the EU and test the different steps (e.g. Systematic Approach to higher level Training of IAEA)

→ **ultimate goal = develop European passports for CPD** (formal (mutual) recognition of learning outcomes independent of the means of acquiring them)
PETRUS II Geological Disposal Education and Professional Development

A FP7 Euratom Fission Training Scheme

• **Education and Training schemes**
  – Training Scheme for Professional Development in Geological Disposal of Nuclear Waste
  – “European Master’s” scheme in Geological Disposal (on-going)

• **Features**
  – Master course components and Professional Development
  – Pilot sessions
  – Evaluation and validation of components
  – Knowledge Management

• **Consortium members** and other affiliated organisations
  – INPL, CU, TUC, ENSMN, Linnaeus, Micans, ENEN (UPM, CTU, TKK, BME), ITC-School, POSIVA, ANDRA, ARAO, RAWRA, ENRESA, GRS, ITN, NDA, IAEA – a consortium of universities, training associations and WMO’s and other employer organisations

• 3 years duration, budget 1,9 Mio €, EC grant 0,8 Mio €
Structure of the PETRUS scheme(s)

EDUCATION
- Modularity
- Mutual recognition
- Mobility

TRAINING

Professional Development Scheme
- Introductory Courses
- Other training courses
- Modular Course 1
- Modular Course 2
- PD Diploma

RD&D (PhD Studies, …….)
How are end-user views integrated in Petrus II?

An end-user council (EUC) was established for the project to give advice and assist in forecasting needs.

The objectives are:

- give data on demand of the current and future needs of professionals
- current and future preferred employee job profiles and competence for geological disposal to ensure quality
- prerequisites for new employees and on entry level requirements for working
- descriptions about the type of jobs and employers in the field for identifying the different career paths
- guidance for the qualification time frames to meet the future needs
- to opportunities for mobility in the form of apprenticeships, research projects or job openings at the end-user organisations or within their networks.
Analysis of required end-user competences and production of PD learning outcomes and the pilot scheme

End-users produce their competency and/or qualification documents including professional profiles

Existing E&T offering in the Petrus consortium

The End-users *)

All Partners

A job profile selected and learning outcomes for a PD defined

Planning Work Shop

Instructional document and Pilot Professional scheme brochure

Providers, Coordinating group and Home institution

Target PD audience, Employers

*) WMOs, research institutes and research networks

Work carried out in the EUC meetings
## Course Tray for the Petrus Pilot Professional Development (PPPD) Scheme

The PPPD on Safety Analysis consists of the following courses in 2011:

<table>
<thead>
<tr>
<th>Course</th>
<th>Date</th>
<th>Provider</th>
<th>Title</th>
<th>Location</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11th – 15th April</td>
<td>Micans, Sweden</td>
<td>Microbiology and Radioactive Waste Disposal</td>
<td>Gothenburg, Sweden</td>
<td>1.5</td>
</tr>
<tr>
<td>2</td>
<td>18th – 20th May</td>
<td>ITC</td>
<td>Safety Case Development</td>
<td>Switzerland</td>
<td>1.5</td>
</tr>
<tr>
<td>3</td>
<td>14th – 23rd June</td>
<td>ITC-CTU-IAEA</td>
<td>Fundamentals of Geological Disposal</td>
<td>Prague &amp; UEF Josef, Czech Rep.</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>29th August – 30th September</td>
<td>Linnaeus University/NOVA</td>
<td>Geological Storage in Precambrian Bedrock</td>
<td>Aspö, Sweden</td>
<td>7.5</td>
</tr>
<tr>
<td>5</td>
<td>September</td>
<td>INPL</td>
<td>Probabilistic Tools in safety assessment</td>
<td>Nancy, France</td>
<td>4</td>
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<tr>
<td>6</td>
<td>October</td>
<td>SUBATECH</td>
<td>Behaviour of Waste Forms</td>
<td>Nantes, France</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>18th – 20th October</td>
<td>ITC-ENSI</td>
<td>Safety Principles and Regulatory Standards</td>
<td>Brugg, Switzerland</td>
<td>1.5</td>
</tr>
<tr>
<td>8</td>
<td>November</td>
<td>UPM</td>
<td>Transport Simulation</td>
<td>Madrid, Spain</td>
<td>3 to 4</td>
</tr>
</tbody>
</table>

*) Not formal ECTS points, but need to be separately validated by a competent higher education institute
Conclusions

• The experience in all the nuclear sectors shows that requirements for high level of expertise and human resources in the field of radioactive waste disposal have to be anticipated through adequate E&T initiatives.

• The objectives of PETRUS II are to support, through a variety of measures, the spreading of scientific competence and know-how throughout the RADWASTE sector in the different MS.

• PETRUS II measures aim to guarantee the earliest possible availability of suitably qualified staff, through joint training activities and improved coordination between different EU educational institutions, WMOs and industries in order to ensure qualifications are equivalent across all Member States, or by facilitating the training and mobility of students and scientists.

• The sustainability of such initiative at European Level implies clear “expression of interest”, support and feedback from end-users.
More information available on

Project web site

• www.petrus2.eu

and

ENEN association’s website for EFTS

• www.enen-assoc.org