# PROCORAD

Comparaisons inter laboratoires en Radio toxicologie

## Programme de la réunion annuelle

## 18-20 Juin 2025

# SALAMANCA – Espagne

***Accueil des participants:* *mercredi 18 juin 14h00***
***Hôtel ABBA FONSECA***
***Plaza San Blas, 2***
***37007 SALAMANCA (ESPAGNE)***
***Traduction simultanée : anglais-français et français-anglais***
***Résumés des présentations scientifiques en fin de programme***

**Une pause café, les visites de Salamanca et du site industriel d'ENUSA sont parrainées par ENUSA**

# Mercredi 18 juin 2025

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| **14h00-14h30** | Café de bienvenue - Distribution des badges et des documents de travail |
| **14h30-15h15** | **Accueil des participants et allocutions de bienvenue**<br>*Claude GUICHET, Président de PROCORAD*<br>*Mariano MORENO, Président d'ENUSA* |
| **15h15-15h30** | **Informations sur le déroulement des journées**<br>**Bilan de participation**<br>*Claude GUICHET, Secrétaire de PROCORAD (France)* |
| **15h30-15h45** | **Traitement statistique des IC PROCORAD**<br>*Philippe CORREZE, ORANO/La Hague/LBM (France)* |
| **15h45-16h15** | **Uranium dans les urines**<br>*Géraldine LECOIX, CEA/Marcoule/LBM (France)* |
| **16h15-17h00** | **Présentation 1 « Evolution historique de l'ENUSA dans la détermination de l'uranium et de ses isotopes »** *David BLAZQUEZ ENUSA (Espagne)* |
| **17h00-17h30** | **Emetteurs gamma-X dans les urines**<br>*Alexandra FAUSSART, CEA/Cadarache/LBM (France)* |
| **17h30-18h00** | **Emetteurs alpha dans les prélèvements narinaires**<br>*Eléonore BERTAUT, CEA/Valduc/LBM (France)* |
| **18h00** | **Fin de session** |
| **18h30** | **Départ pour une visite de la ville de Salamanca** |

# Jeudi 19 juin 2025

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| **08h30-09h15** | **Carbone 14, Soufre 35 et Phosphore 32 dans les urines**<br>*Véronique CHAMEL, CEA/Grenoble/LBM (France)* |
| **09h15-10h00** | **Présentation 2 : « Une méthode simple pour adapter les techniques de mesure pour une surveillance de masse de la contamination interne en cas d'urgence radiologique »**<br>*Paolo BATTISTI ENEA (Italie)* |
| **10h00-10h30** | **Pause-café** |
| **10h30-11h00** | **Actinides dans les urines**<br>*Géraldine LECOIX, CEA/Marcoule/LBM (France)* |
| **11h00-11h45** | **Présentation 3 : « Orano Med : du déchet radiologique aux traitements anticancéreux révolutionnaires »**<br>*Thomas PRIEM ORANO MED (France)* |
| **12h00-14h00** | **Déjeuner** |
| **14h00-14h45** | **Assemblée générale ordinaire et assemblée générale extraordinaire PROCORAD**<br>• Rapport moral *: Claude GUICHET, président*<br>• Rapport financier : *Philippe CORREZE, trésorier*<br>• Démarche qualité *Géraldine LECOIX, responsable AQ*<br>• *Site web : présentation du changement du site web Véronique CHAMEL responsable site web et Laurent MEUWLY Consultant informatique*<br>• Questions diverses<br>• Vote et émargement de la liste de présence |
| **14h45-15h30** | **Actinides dans les cendres de selles**<br>*Philippe CORREZE, ORANO/La Hague/LBM (France)* |
| **15h30-16h00** | **Pause-Café** |
| **16h00-16h30** | **Actinides DTPA**<br>*Géraldine LECOIX, CEA/Marcoule/LBM (France)* |
| **16h30-17h00** | **Revue de presse et agenda international**<br>*Nicolas BAGLAN, animateur Conseil Scientifique PROCORAD* |
| **17h00-17h30** | **Tritium organiquement lié dans le blé**<br>*Nicolas BAGLAN, CEA/Paris Saclay/DES-SIAE (France)* |
| **17h30** | **Fin de session** |

**19h30** Dîner de GALA

## Vendredi 20 juin 2025

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| **09h00-09h45** | **Sr-90 dans les urines**<br>*Xavier MILLOT, CEA/Paris Saclay/LBM (France)* |
| **09H45-10H30** | **Tritium dans les urines**<br>*Eléonore BERTAUT, CEA/Valduc/LBM (France)* |
| **10h00-10h30** | **Pause-café** |
| **10h30-11h00** | **Urines Polonium 210**<br>*Xavier MILLOT, CEA/Paris Saclay /LBM (France)* |
| **11h00-11h45** | **Présentation 4 : « Le challenge des "nouveaux radioisotopes" en médecine nucléaire.»**<br>*Sandrine HUCLIER Subatech (France)* |
| **11h45-12h15** | **Discussion générale- Présentation des comparaisons inter laboratoires 2026 : Dates, lieu, caractéristiques techniques**<br>*Claude GUICHET, secrétaire PROCORAD* |
| **12h15** | **Fin du Congrès- Déjeuner** |
| ***(14h00)*** | ***(Départ pour la visite du site de production ENUSA)*** |
| ***(17h30)*** | ***(Retour prévu à l'hôtel ABBA FONSECA).*** |

| Présentation | | Titre | Résumé |
|---|---|---|---|
| **1** | David Blasquez-Perez | Evolution historique de l'ENUSA dans la détermination de l'uranium et de ses isotopes | ENUSA is the national uranium company in Spain. Many years of uranium mining have demanded the need to survey and analyze concentrations in deposits. Currently, the nuclear fuel factory located in Salamanca supplies fuel to Spain and Europe. Their laboratories use various techniques to measure, control and monitor the enriched uranium oxide aerosols concentration in the exposed workers and the potential environmental impact. |
| **2** | Paolo Battisti | Une méthode simple pour adapter les techniques de mesure pour une surveillance de masse de la contamination interne en cas d'urgence radiologique | "Taking into account the general, often disproportionate perception of radiological risk, one of the most critical aspects in emergencies associated with the release of significant amounts of radioactivity into the environment, is undoubtedly the possibility of radioactive contamination (internal contamination) of the individuals involved, given the heavy psychological impact quite surely it would have on the public, also in the presence of low or even negligible levels of contamination.<br>In this context, the capacity to conduct sufficiently accurate and fast evaluations of exposure levels (internal dose) for each person involved, and thus a reliable quantification of the actual individual risk, should be undoubtedly a fundamental tool to have available for facilitating the social management of the event.<br>In a situation where radiation protection criteria must be substantially adjusted to specific needs, if necessary also adopting reference dose levels significantly higher than those used in standard radiation protection practice, as suggested by ICRP itself, the aforementioned ""fastness"" is closely related to the capacity to carry out a sufficiently high number of appropriate individual measurements in a short time. Achieving this goal requires not only the involvement of many specialized laboratories but also, and above all, the adoption of measurement techniques specifically designed and validated.<br>From this perspective, while simplified in vivo measurement methodologies (whole-body counting, organ counting) have been extensively tested as suitable and easy-to-use solutions for gamma-emitting radionuclides, internal contamination monitoring for pure alpha and beta emitters is much more complex to address. In most cases, there are in fact no truly alternative methods useful for screening, and standard radiotoxicological analysis procedures for excreta are often too complex, time spending and costly for large-scale implementation. In these cases, the only realistically feasible solution, despite its limitations, is to reconfigure the analysis protocols to seek a compromise between the quality of the result, especially in terms of detection limit level and precision, and the simplification of analytical and sampling techniques. Given the hypothesized conditions (monitoring in a short time a large number of individuals of the public), this approach can only be directed toward analysis of small volume urine samples.<br>The aim of this presentation is just to expose a simple criterion based on the concept of “minimum detectable dose” and developed in order to design useful methods of analyses of small urine samples to be applied whenever a mass internal contamination monitoring is required. It allows for the prior identification of which parameters to ""play with"" for defining an “as fastest as possible” procedure, capable of detecting all contaminations leading to the exceedance of a predetermined effective dose value assumed as a Reference Level, as well as delineating the time interval useful for its application (in this specific case, the time spent between the moment of contamination and urine collection).<br>" |
| **3** | Thomas Priem | Orano Med : du déchet radiologique au traitement anti-cancéreux révolutionnaire. | Orano Med was created from an idea: searching within the Orano group for new applications for materials held which until then had no use and were even considered as waste. In 15 years, Orano Med has been able to propel Pb-212 as one of the most promising radionuclides in targeted alphatherapy for the treatment of patients suffering from cancers for which there is no effective therapeutic solution. But Orano Med has also been able to develop a robust industrial tool to guarantee the global supply of its therapies. If the marketing of its first radiopharmaceutical drug scheduled for 2026 will mark an accomplishment, the first patients treated during clinical trials and cured have already made of this adventure a success. |
| **4** | Sandrine Huclier | Le challenge des “nouveaux radioisotopes” en médecine nucléaire. | This presentation will present the different radionuclides produced in Arronax for Nuclear Medicine. A focus will be given on the 44Ti/44Sc generator as a source of 44gSc for PET imaging. Only a small number of facilities worldwide use these generators. One of the main drawbacks is the half-life of the parent radionuclide 44Ti (t1/2 = 60 y). The high-energy γ-rays (1157 keV, 99.9%) emitted during 44gSc decay can reduce image quality. This involves as well to design specific radiosafety procedures around the generator. Additionally, the utility of Auger radionuclides in therapy represents a great potential due to their very short range and high-multiplicity, high LET-like qualities. The work on 103mRh (t1/2 = 56.11 min) produced from 103Ru will be presented. The most challenging task is to reach an effective separation between the two radionuclides because of the highly unpredictable and very complicated chemistry. |