

Oportunidades de la I+D en PR en el marco de EURATOM

Jornada PEPRI 29/11/2018

E. Gonzalez (CIEMAT)

Representante español en Comité de Programa EURATOM (Fisión)

Programa Euratom

- Investigación, Innovación, Formación y Educación relacionada con la tecnología nuclear en los países miembros (~UE) + asociados.
- Dos sub-comités Fisión y Fusión + acciones directas (JRC)
- Áreas de Fisión:
 - Seguridad Nuclear de reactores presentes y futuros
 - Gestión de residuos
 - Protección radiológica
 - Infraestructuras
 - Educación + Formación

Programas de 5 años + 2 años por alineamiento con PM de otras áreas.

Convocatorias cada 2 años (hay 1 convocatoria de 1 año en cada programa)

La preparación de un programa se inicia 3-4 años antes de entrar en vigor

-> Momento de influir en la Comisión (Países y Plataformas)

Cada convocatoria dentro del Programa se Discute en el Comité de programa durante 6-12 meses. Discusión de detalles con otros países y la Comisión.

Nueva tendencia a programación conjunta (EJPs) vs. Proyectos competitivos

Aunque es posible influir, el número de acciones para PR por convocatoria es de 1 a 3 -> Solo se puede conseguir priorizar 1 o 2 aspectos por convocatoria. Es importante negociar la prioridad en las Plataformas y con otros países.

Programa Euratom

- **Punto de contacto:** Yolanda Benito (CIEMAT), Expertos: Eduardo Gallego (UPM) + Joaquín Farias (ENRESA) (tentativo) , Representantes: Francesc SUBIRADA (Generalitat de Catalunya), Enrique González (CIEMAT)
- **Tipos de proyectos y Formas de participación en propuestas**
Proyectos competitivos:
 - RIA: Research & innovation actions.** Centros de investigación, Universidades, Ingenierías y otras entidades de investigación – 3 entidades legales. Financiación al 100% de los costes directos + C.I.
 - IA: Innovation actions** Industrias, Centros de investigación, Universidades, Ingenierías y otras entidades de investigación – 3 entidades legales. Financiación al 70% de los costes directos (100% para entidades sin animo de lujo) + C.I.
 - CSA: Coordination & support actions** Centros de investigación, Universidades, Ingenierías y otras entidades de investigación – 1 entidad legal. Financiación al 100% de los costes directos+ C.I.

European Joint Programme (EJP) Cofund actions (colaborativos)

Participantes: Ministerios o Agencias financiadoras de programas nacionales de investigación e innovación (POW). Pueden delegar en organismos de investigación (PAM managers) . Link Third Parties (LTP) vinculados a los POW y PAM + otras terceras partes. 5 entidades legales. Financiación hasta el 70%(*) de los costes directos (100% para entidades sin animo de lujo) + C.I.

- **Convocatorias abiertas** (otras terceras partes)
- **Desarrollando el programa de trabajo por el consorcio** (POW+PAM+LTP)

Horizonte 2020 – Euratom Fisión: Convocatorias previas

Convocatoria 2014-2015

NFRP 7 – 2015: Integrating radiation research in the European Union (MELODI, NERIS, ALLIANCE, EURADOS)

EJP CONCERT (<http://www.concert-h2020.eu/>) Desde 2014 hasta 2020

2 convocatorias abiertas (2016/2017) en áreas de las plataformas europeas en PR.

De las 37 propuestas se han seleccionado 9 proyectos para ser financiados:

- **CONFIDENCE**: COping with uNcertainties For Improved modelling and DEcision making in Nuclear emergenCiEs
- **LDLensRad** (the European CONCERT project starting in 2017): Towards a full mechanistic understanding of low dose radiation induced cataracts
- **TERRITORIES** To Enhance unceRtainties Reduction and stakeholders Involvement TOwards integrated and graded Risk management of humans and wildlife In long-lasting radiological Exposure Situations
- **ENGAGE**: ENhancinG stAkeholder participation in the GovernancE of radiological risks for improved radiation protection and informed decision-making
- **LEU-TRACK**: The Role of Extracellular Vesicles in Modulating the Risk of Low Dose Radiation-induced Leukaemia
- **PODIUM**: Personal Online DosImetry Using computational Methods
- **SEPARATE**: Systemic Effects of Partial-body Exposure to Low Radiation Doses
- **VERIDIC**: Validation and Estimation of Radiation skIn Dose in Interventional Cardiology
- **SHAMISEN-SINGS**: Stakeholder involvement in Generating Science after Nuclear Emergencies

Participan: Agencia de Inv. (POW) - CIEMAT (PAM)+ ISGlobal+UPC (LTP.) + T.P.

Convocatoria 2016-2017

NFRP 9: Impacts of low-dose radiation exposure

Horizonte 2020 – Euratom Fisión: Convocatorias previas

Convocatoria 2018

Convocatoria cerrada el 27 Sept 2018 a las 17:00

NFRP-2018-8: Radiation protection research (RIA)

This action should seek close cooperation with and complement actions of CONCERT and MEDIRAD projects, which are already funded under the Euratom Programme strictly avoiding duplication (including projects selected through the CONCERT calls).

This action must take into account prioritisation of research in this field reflected in the strategic research agendas of the Radiation Protection Research Platforms (MELODI, EURADOS, NERIS, ALLIANCE, and EURAMED).

The research to be undertaken will have to improve knowledge in the fields of radiation biology epidemiology, dosimetry, emergency preparedness, radioecology, and public engagement.

Research on the human health effects of ionising radiation will have to include one or several of the exposure situations occurring in the nuclear industry, the medical sector, from past nuclear accidents, NORM (naturally occurring radioactive material) whether or not technologically enhanced, and cosmic radiation.

(18 propuestas alguna con participación española)

Horizonte 2020 – Euratom Fisión: Convocatorias previas

Convocatoria 2018

Convocatoria cerrada el 27 Sept 2018 a las 17:00

NFRP-2018-9: Strategy for the exploitation of research results funded under Euratom Research and training Programmes in the field of radiation protection (CSA)

This action is supposed to provide a **systematic assessment of the use of research results** from the past Euratom radiation protection projects and to propose **recommendations for future research policy** in this field, with the double purpose:

- (a) better use of research results **for policy making** and
- (b) better use of research results **for implementing the Euratom requirements for radiation protection of the public, staff and patients**

(1 propuesta)

Horizonte 2020 – Euratom Fisión: Convocatoria 2019-2020

Último borrador – Probablemente final

A. NUCLEAR SAFETY

- NFRP-01: Ageing phenomena of components and structures and operational issues
- NFRP-02: Safety assessments for Long Term Operation (LTO) upgrades of Generation II and III reactors
- NFRP-03: Safety margins determination for design basis-exceeding external hazards
- NFRP-04: Innovation for Generation II and III reactors
- NFRP-05: Support for safety research of Small Modular Reactors
- NFRP-06: Safety Research and Innovation for advanced nuclear systems
- NFRP-07: Safety Research and Innovation for Partitioning and/or Transmutation
- NFRP-08: Towards joint European effort in area of nuclear materials

B. DECOMMISSIONING AND ENVIRONMENTAL REMEDIATION

- NFRP-09: Fostering innovation in decommissioning of nuclear facilities

Horizonte 2020 – Euratom Fisión: Convocatoria 2019-2020

Último borrador – Probablemente final

C. RADIOACTIVE WASTE MANAGEMENT

NFRP-10: Developing pre-disposal activities identified in the scope of the European Joint Programme in Radioactive Waste Management

D. EDUCATION & TRAINING

NFRP-11: Advancing nuclear education

E. RADIATION PROTECTION AND MEDICAL APPLICATIONS

NFRP-12: Further integrating Radiation Protection research in the EU (18.00 RIA/18)

NFRP-13: Research roadmap for medical applications of ionising radiation (2.00 CSA /2)

NFRP-14: Improving low-dose radiation risk appraisal in medicine (6.00 RIA/6)

F. RESEARCH INFRASTRUCTURE

NFRP-15: Optimised fuels for production of medical radioisotopes (7.50 RIA/7.5)

NFRP-16: Roadmap for use of Euratom access rights to Jules Horowitz Reactor experimental capacity

NFRP 17: Optimised use of European research reactors

Horizonte 2020 – Euratom Fisión: Convocatoria 2019-2020

E. RADIATION PROTECTION AND MEDICAL APPLICATIONS

NFRP-12: Further integrating Radiation Protection research in the EU

(1 RIA 18.00 M€ EU contribution)

Specific Challenge:

- Protecting people and the environment from the potentially harmful effects of ionising radiation in the context of **expanding practices** involving radiation in the EU, notably **in the medical sector**.
- Harmonisation of EU planning of **response to a potential radioactive contamination of territories**, taking into account post-accident and existing situations of naturally occurring radioactive material.
- For the management of **radioactive waste**, for the safe implementation of nuclear installations' **decommissioning**.
- Knowledge on the **effects of low-dose** ionising radiation on peoples' health and the environment.
- Complexity of data handling, interpretation and exploitation requires a **multidisciplinary approach** of the field that includes radiobiology, dosimetry in specific fields, epidemiology, radioecology, radiation-based imaging and therapeutic techniques, emergency preparedness and human science and society.

Horizonte 2020 – Euratom Fisión: Convocatoria 2019-2020

E. RADIATION PROTECTION AND MEDICAL APPLICATIONS

NFRP-12: Further integrating Radiation Protection research in the EU

(1 RIA 18.00 M€ EU contribution)

Scope:

- Take into account **past programs** and the **priorities as identified by the European Radiation Protection Platforms** (MELODI, EURADOS, NERIS, ALLIANCE, EURAMED).
- Uncertainties about the **risks from low-dose** radiation and uncertainties pose for the implementation of **Directive Euratom 2013/59**.
- It should also propose **innovative concepts** to explain the **varied responses of biological and ecological systems**, due to their own diversity, to the diverse pathways by which radiation release energy to bio-molecules, cells and organ tissues
- Propose innovative ways to incorporate existing concepts into **risk prevention, assessment and management**, including stakeholder's involvement processes.
- The proposal should include **shared experimental work** between the **European research infrastructures in radiation protection** identified in previous programmes.
- It should also include the **exchange of scientists**
- The benefit of the proposal for **preservation of the integrative process of research teams** having a regulatory mandate for radiation protection research and teams able to contribute to knowledge by their proximity with the wider research community will also be considered during evaluation.

Horizonte 2020 – Euratom Fisión: Convocatoria 2019-2020

E. RADIATION PROTECTION AND MEDICAL APPLICATIONS

NFRP-13: Research roadmap for medical applications of ionising radiation (1 CSA 2.00 M€ EU contribution)

Specific Challenge:

- Nuclear and ionising radiation technologies have a central place in modern medicine and have **large impact on health**.
- It has also significant **growth and jobs potential**
- The medical applications of ionising radiation experience **rapid development**, both on the diagnostic and therapeutic side.
- This dynamic environment calls for the development of a **co-ordinated and systematic European approach to:**
 - **research and innovation in medical applications of ionising radiation**, with the aim to improve patient care and quality of life of the EU citizens,
 - support **growth and jobs** in the EU and to improve the **EU's position on the global market**.
 - The action in this area should be informed by, and **co-ordinated with**, other Commission work on **non-power applications** of ionising radiation .
- *Provide guidance to stakeholders and the Commission on the steps needed in the coming decades for the development of research activities and knowledge in this area.*

Horizonte 2020 – Euratom Fisión: Convocatoria 2019-2020

E. RADIATION PROTECTION AND MEDICAL APPLICATIONS

NFRP-13: Research roadmap for medical applications of ionising radiation (1 CSA 2.00 M€ EU contribution)

Scope:

- Prepare a **Strategic Research Agenda (SRA)** for research on medical applications of ionising radiation during with the objective of ensuring synergies between the 'Health' cluster of the Horizon Europe Framework Programme for **Euratom Programme 2021-2025**.
- Inputs and active involvement of European **stakeholders from the clinical, industrial, regulatory, scientific and all other relevant fields** should be ensured through their inclusion in the project consortium, **by organising dedicated events, workshops** and by any other relevant ways of involvement.
- The **SRA should also consider improvements to protection of staff, patients, carers, the public and the environment in medical installations against adverse effects of radiation**. In this context, the SRA **should take account of the existing research agendas and Euratom actions on radiation protection in medicine**, as well as the principles of radiation protection defined by Council **Directive 2013/59/Euratom**.
- Building upon the preparatory activities towards a Strategic agenda for non-power applications, this action should cover 7 well identified topics.

Horizonte 2020 – Euratom Fisión: Convocatoria 2019-2020

E. RADIATION PROTECTION AND MEDICAL APPLICATIONS

NFRP-13: Research roadmap for medical applications of ionising radiation (1 CSA 2.00 M€ EU contribution)

- Building upon the preparatory activities towards a Strategic agenda for non-power applications, this action should cover 7 well identified topics.
 1. Analyse the research needs for the development and delivery of high-quality healthcare
 2. Identify the key needs and actions for European research into the medical applications of ionising radiation including diagnostic and therapeutic applications of x-rays, particle accelerators, radioisotopes and research reactors.
 3. Identify the needs for European research to support innovation in further medical applications, such as photon, proton and heavy ion radiotherapy, molecular radiotherapy and theranostics, image guided radiotherapy, advanced and hybrid diagnostic imaging, health screening etc.
 4. The SRA section on medical radioisotopes should examine the possibility for establishing a European centre of excellence for research into new or improved radioisotope therapies and diagnostic tests as well as into new or improved methods for production of radioisotopes. Other areas of research, e.g. relating to the security of supply of radioisotopes, may also be covered.
 5. Identify needs and actions, strengths and weaknesses of European research actors in respect to the various aforementioned fields.
 6. Analyse and propose actions regarding the EU education and training capabilities and future needs related to the various aforementioned fields.
 7. Integrating radiation protection and safety aspects of medical applications into a broader framework of quality and safety in healthcare. Aspects relating to clinical research, equipment and drugs authorisation, development and implementation of clinical guidance, equipment quality control and dose measurement, use of e-Health systems, etc. should be examined.

Horizonte 2020 – Euratom Fisión: Convocatoria 2019-2020

E. RADIATION PROTECTION AND MEDICAL APPLICATIONS

NFRP-14: Improving low-dose radiation risk appraisal in medicine

(1 RIA 6.00 M€ EU contribution)

Specific Challenge:

- The use of appropriate radioisotopes in nuclear medicine in diagnostic and therapy (theranostics) is progressing.
- The reinforced risk appraisal of medical exposure will reinforce consideration of benefits.
- It includes the selection of **appropriate radioactive cytostatic compounds** and the establishment of adequate **controls of their discharges** in water streams by selecting short-lived radioisotopes that take into account the protection of workers, carers and comforters, the public and the environment.
- Moreover, the **medical sector** is the best place to **keep record of the overall health condition of patients**. Thus, using data of patients in the medical sector together with radiation exposure records will improve knowledge.
- **Previous** funding efforts have launched **collaboration between radiological protection specialists and medical doctors**. It deserves further collaboration as results **can be used for other exposure situations**

Horizonte 2020 – Euratom Fisión: Convocatoria 2019-2020

E. RADIATION PROTECTION AND MEDICAL APPLICATIONS

NFRP-14: Improving low-dose radiation risk appraisal in medicine

(1 RIA 6.00 M€ EU contribution)

Scope:

- Doses on **new medical applications of ionising radiation** in view of their fast deployment.
- Harmonised **patient data collection from different disciplines** and treatment approaches
- This should apply due consideration to double causation and peculiar conditions to medical procedures.
- This action should **take into account the gap analysis performed** by MELODI, EURADOS and EURAMED, and address the key issue **of individual sensitivity and susceptibility to radiation**.
- This data should include data collected from imaging procedures **benefiting to the most sensitive, extensive and long lasting followed-up category of patients**. It should also include data on most exposed medical staff as well as patients of nuclear medicine, including theranostics.
- It should involve **radiology and therapy equipment manufacturers** or their associations, European associations of **researchers in this field**, organisations having a **regulatory mandate for radiation protection research** from Member States or EU bodies and **universities and hospitals**. It should also involve **radioisotope developers and suppliers**.
- Proposals in this topic should take into consideration risk communication and the ethics of medical applications.

Más allá de EURATOM H2020

EURATOM 9FP: HORIZON EUROPE

- Se ha recibido el primer borrador de la CE para HORIZON EUROPE EURATOM
- Distintos objetivos y métodos de valoración de propuestas. Orientados al impacto social.
- Nuevos instrumentos pero se mantienen los RIA, EJP + similares para Programación Conjunta
- Áreas temáticas similares

Es buen momento para empezar a preparar consorcios y propuestas para la convocatoria 2019-2020 y

Para identificar prioridades para el 9PM e intentar convencer a las plataformas, otros estados miembros y la comisión de incluirlos en el programa del 9PM