



## 25 YEARS OF NORM SYMPOSIA

### FUTURE: RESIDUES APPLIED IN A CIRCULAR ECONOMY

May 9 - 13 2022

Utrecht, The Netherlands



Slag applied in dyke construction  
Courtesy: Project Organisation Water Safety (NL)



Slag applied in dyke construction  
Courtesy: Project Organisation Water Safety (NL)

# SECOND ANNOUNCEMENT

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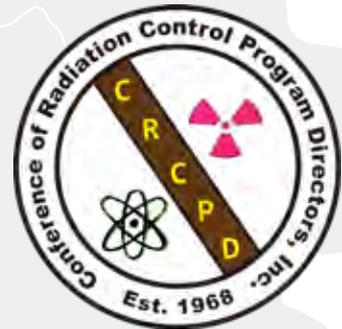


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## Welcome message from the Symposium President

Under the auspices of the Dutch Society for Radiation Protection (NVS) the Dutch foundation "Radiation Protection Symposium North-West Europe" (RPSNWE) is organising the 10<sup>th</sup> international symposium on NORM. This will take place from May 9<sup>th</sup> until May 13<sup>th</sup> 2022 in Utrecht, the Netherlands.

At that time, it will be 25 years ago that the first NORM Symposium was organised (1997), also in the Netherlands. The title of that symposium was "Radiological problems with natural radioactivity in the non-nuclear industry". It was attended by many experts, both from industry and from the regulatory authorities, from countries all over the world.

NORM I was the first event in history that paid attention to the radiological consequences of natural radioactivity in raw materials in a variety of industries. Since that time 8 other NORM symposia were held, first in Europe, but later on also in other parts of the world. It showed that there was, and still is, a great need to address the radiation protection issues associated with NORM for workers in these industries, the exposed population and the environment.

The central theme of NORM X reflects the progress in international philosophy about closing material circuits. The theme implies a special focus on challenges to apply residues with elevated levels of natural radioactivity in a circular economy. Next to this, NORM X will also provide the opportunity to review the progress that has been achieved since the previous NORM Symposium (NORM IX; Denver, USA, September 23-27 2019) in research, disposal, radiation protection, management, etc. The presentations and sharing of information should lead to increased harmonisation of operational aspects and wider application of international guidance and regulations, including the EU BSS and the IAEA IBSS, and in alignment with the UN Sustainable Development Goals.

We are happy to inform you that many organisations cooperate in preparing this symposium. They, and others, actively participate in the Steering Committee, the Scientific Programme Committee and the Local Organising Committee. We owe the members of these committees many thanks for establishing an outstanding programme, with high quality scientific sessions, refreshers courses and technical visits. The five day programme of the Symposium will offer you a whole range of plenary, parallel and poster sessions on all relevant scientific and operational topics in NORM management, as well as plenty of opportunities for exhibitors. Most importantly, the Symposium offers radiation protection professionals the opportunity to interact and exchange experiences among each other. Thus we are confident to contribute to realizing what is expressed by the theme of our Symposium.

It is a particular honour for me, having been the Symposium President of NORM I, to welcome you again in the same role as the Symposium President in this 10<sup>th</sup> edition of the NORM symposia. I really do hope that you will be able to disseminate the second announcement of this Symposium as widely as possible and that you will also be able to contribute to the success of NORM X by submitting your abstract and attending the Symposium. Of course I also would like you to take advantage of this opportunity to visit our beautiful country and, in particular, the city of Utrecht, which happens to celebrate its 900 years anniversary in 2022.

I'm looking forward to welcome you in May 2022.

Jan van der Steen  
*Symposium President*





## About your host

The Dutch Society for Radiation Protection (NVS) invites you to join the 10<sup>th</sup> International Symposium on NORM (NORM X), which will take place in Utrecht, The Netherlands from May 9<sup>th</sup> to May 13<sup>th</sup> 2022. This is the 1<sup>st</sup> International NORM Symposium ever to be hosted by an associate society of the International Radiation Protection Association (IRPA).

The NVS was founded more than 60 years ago as a scientific society to enhance knowledge of radiation protection in medicine, industry and research. To reach this goal we promote our members to share the knowledge gained. The background of our 800 members is diverse: 40% medical, 30% industrial, 30% academic/nuclear/government. More than 50% of our members is employed in operational radiation protection. The society is recognised as the professional society for radiation protection professionals in the Netherlands. Besides this, the NVS is a main consulting partner for the Government in radiation protection matters such as development of regulations and best practices. We support participation of our members in local, national, European and international activities such as workshops, committees, task groups, conferences, etc.. It is important that we learn from each other.

After being your host for the sub-regional IRPA Congresses in 1975 (Amsterdam) and 2003 (Utrecht), and in 2018 the 5<sup>th</sup> European IRPA Congress (The Hague) we are honoured to be your host again but now for the 10<sup>th</sup> International NORM Symposium in Utrecht. With a view on the (European) Council Directive 96/29/Euratom issuing for the first time 'regulations with respect to natural radioactivity' in 1997 KEMA on behalf of the Dutch Ministry of Public Housing, Spatial Planning and the Environment organised the 1<sup>st</sup> International Symposium in Amsterdam.

NORM X will both look back what has been achieved in "25 years of NORM Symposia" and look forward with the theme "Residues Applied in a Circular Economy". NORM X aims to provide a forum for the industrial, technical, scientific and regulatory communities involved in the management of NORM and to disseminate the results of research, scientific information and knowledge. The theme implies a special focus on challenges to apply residues with elevated levels of natural radioactivity in a circular economy. I hope you will be able to actively participate in the Symposium and share your knowledge and skills on all kinds of aspects of the safe handling or reuse of NORM.

For registration and submitting abstracts, please visit: [www.normx2022.com](http://www.normx2022.com)



Carolien Leijen  
*President Dutch Society for  
Radiation Protection (NVS)*



## NORM X Symposium

The basis for the scientific programme is the symposium theme:

### 25 years NORM symposia: Future, Residues applied in a circular economy

NORM X is organised in cooperation with IAEA, EC, ILO, IRPA, ICRP, UNSCEAR, USEPA, ARPANSA, CRCPD, ENA, ENVIRONET, SHARE and the NVS. The targeted audience of this Symposium is a variety of stakeholders including various sectors of industries associated with NORM, disposal facilities, (inter)national transport as well as regulators, researchers and service providers. NORM X should lead to increased harmonization of operational aspects to reach sustainability in the management of NORM residues and waste and wider application of international guidance and regulations, including the IAEA BSS (General Safety Requirements part 3) and the EU BSS (European Council Directive 2013/59/EURATOM), which have already achieved considerable mutual harmonisation.

#### Symposium board

The board of the NORM X symposium consists of:

- \* Jan van der Steen (president)
- \* Leo van Velzen (secretary)
- \* Gert Jonkers (treasurer)
- \* Jeroen Welbergen (general member)
- \* Paul van Rooijen (general member)

In the organisation of this symposium the board and all committees are supported by A Solution (professional congress organisation).

#### Steering committee

Jan van der Steen  
Leo van Velzen  
H. Burçin Okyar  
Stefan Mundigl  
Jean François Lecomte  
Analiá Canoba  
Jim Hondros  
Julian Hilton  
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Co-chair  
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EC  
IRSN  
ICRP  
IRPA NORM Taskgroup  
Aleff Group  
CIAE  
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Ruth Mc Burney  
Philip Egidi  
David Okoh Kpeglo  
Shengli Niu  
Rick Tinker  
Ferid Shannoun  
Melanie Buiteman

Consultant  
ENA  
CRCPD, NORM IX  
USEPA, NORM IX  
Ghana AEC  
ILO  
ARPANSA  
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## Scientific Programme Committee

Leo van Velzen	Chair	Christina Nuccetelli	ISS
Gert Jonkers	Co-chair	Tanja Perko	SCK-CEN
H. Burçin Okyar	IAES	Kelly Jones	PHE
Peter Görts	ANVS	Maria de Lurdes Dinis	CERENA
Martijn van de Schaaf	RIVM	Ivana Ženatá	SJUB
Govert de With	NRG	Steven Brown	SENES
Oskar van Dongen	NOGEPA	Roberto Suárez Alvarado	CNSNS
Frank Harris	Rio Tinto	Konstantinos Karfopoulos	Greek AEC
Marit Brommer	IGA	David Okoh Kpeglo	Ghana AEC
Mette Nilsen	DSA	Jenny Goodman	BERP
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## Local Organising Committee

Jeroen Welbergen	Chair
Paul van Rooijen	Co-chair
Lonneke van Bochove	Stralingssupport BV
Rob Wiegers	IBR Consult BV
Wouter Schroeyers	University of Hasselt
Rainer Gellerman	Nuclear Control & Consulting
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## Symposium programme

The programme will feature a series of keynote plenary presentation sessions, parallel topical sessions, poster sessions, plenary summaries and provide focused forums. The plenary sessions, featuring world-leading NORM experts and NORM practitioners, will highlight the current state of key topics. The final plenary session will identify the principal conclusions and outcomes from the Symposium.

The preliminary programme contains nine topical sessions and sixteen organised parallel sessions. These sessions will provide oral presentations of submitted papers and selected keynote presentations, reflecting the scientific and practical areas defined by the topics and subjects:

### *25 years of NORM Regulation*

Experiences, strengths and challenges dealing with national and international recommendations, guidelines and regulations on NORM.

### *Fundamental and practical implementation aspects of regulations*

- i. Sustainability in the system of radiation protection and management of radiation exposure in industrial operations involving NORM.
- ii. Fundamental safety and security objectives and principles of protection, safety and security, radiation protection culture and education and training herein.
- iii. Practical implementation of the regulation; integration of radiation protection against NORM with other hazards; graded approach for optimization, according to the risk.
- iv. What is the process leading to a reasonable and sustainable management of NORM, what would be the elements to consider that the situation is not or no longer tolerable?

### *Current and future challenges – NORM tailings and residues in a Circular Economy*

- i. Management and use of tailings and residues to meet UN Sustainable Development Goals, notably SDG 12.5 reduction/elimination of waste. Reduce or eliminate accumulation and disposal through recovery and reuse. Alignment with Environmental, Social and Governance financing principles. Related procedures for sustainability reporting.
- ii. Integrate NORM tailings and residues in a circular economy: reclassification as co- or by-products; interim storage as current or future “reusable raw materials”; whole life-cycle management with End of Life planning; Graded Approach to use; Proportionality Principle applied to risk- and cost-benefit analysis; secondary for primary resource substitution to conserve primary resources and reduced land use allocation to disposal; minimum use target to promote R&D and market uptake.

### *Environmental Aspects of NORM*

- i. Experiences and challenges in reaching sustainable environmental practices in industrial operations with NORM residues leading to a circular economy.
- ii. Environmental impacts associated with NORM residues.
- iii. Environmental remediation of NORM contaminated sites; remediation of legacy sites.



### *Industry*

- i. Operational practices at both industrial- and artisanal-scale handling, recovering and reusing economically valuable NORM by-products e.g. structures, equipment, tailings and residues involving NORM.
- ii. Support for industrial and artisanal processes involving prevention and minimization of residues, waste storage/disposal facilities, decommissioning projects including occupational, public and environmental radiation safety and protection.

### *NORM Sampling & Metrology*

- i. Applied sampling/monitoring and metrology strategies.
- ii. Advantages and disadvantages of destructive and non-destructive metrologies.
- iii. ISO-standards, site/industrial specific assessments, etc.

### *Stakeholder engagement and public communication*

- i. Enhancing regulatory/public acceptance and radiation protection aspects of (new) developed products containing “reused/recycled” materials/residues, etc.
- ii. Enhancing risk/dose communication, including risk perception, in relation to NORM in a sustainable society, especially in reuse and recycling of NORM residues, remediation of legacy (potentially contaminated) sites.
- iii. Enrich communication expertise, public engagement, stakeholder involvement, technical communication with the regulator, etc.

### *Research and Development*

- i. Investment in new product development for valorising and reusing NORM by-products within the circular economy.
- ii. Development of supporting measures for operational management preventing/minimizing NORM waste, decommissioning of installations, environmental remediation and maximising positive and minimising negative effects on people and environment.

### *Transportation of NORM classified materials*

National and international regulations, challenges and daily practice.





## Refresher courses

The Refresher course programme provides participants the opportunity to update their knowledge in specific areas of radiation protection science and the practice of NORM. The courses are aimed at providing a broad overview of the current state of a given topic, thereby giving participants not working directly in that field a sound understanding of the current status and at giving experienced practitioners a more detailed understanding of up-to-date developments in a field. In our preliminary schedule, we have arranged for nine refresher courses to be held on Tuesday, Wednesday and Thursday.

The courses will be delivered by selected instructors according to their outstanding expertise and competence in teaching. Some will be at the beginner level, some at a more advanced level, and some courses will be aimed at young professionals.

The subjects of the refresher courses are:

- \* NORM Regulation in IAEA GRS Part 3 and in European Council Directive 2013/59/EURATOM.
- \* From Fundamental Safety Principles to Operational Radiation Protection Programmes.
- \* Environmental Remediation of a NORM site – from Site Characterization to End State.
- \* US EPA Risk Models & Assessments training.
- \* NORM metrology and sampling.
- \* Applied radiological risk communication.
- \* Workshop on the safe Management of NORM residues.
- \* The application of the ICRP system to NORM in industrial processes: from publications 103 to 142.
- \* Decommissioning of NORM Sites.





## Technical visits

A range of interesting technical visits will be planned showing the wide range of NORM related applications present in the Netherlands, north-Belgium and west-Germany:

- \* Hazardous Waste Repository, the Netherlands.
- \* Radioactive Waste Storage facility, the Netherlands.
- \* NORM decontamination installation, the Netherlands.
- \* Geothermal energy installation, the Netherlands.
- \* Ceramic Tiles Industry, the Netherlands.
- \* Customs, Belgium.
- \* Gypsum landfill, Belgium.
- \* Recycling industry, Germany.

The visits are scheduled for Wednesday (partially only in the afternoon) during the symposium. The visits (register via the registration form) will only take place, if sufficient participants are registered. The fee for the technical visits (covering transport costs) will be € 50,- per person per visit. Please note (cf. registration form) there may be a maximum number of participants for a specific visit. Other aspects, such as foreseen combination with refresher courses or additional information on the visits will be published in due time. You will always have the option to change your preferences, in case you prefer another technical visit based on the additional information.





## Call for abstracts

The Scientific Programme Committee is pleased to invite participants to submit their contribution to the NORM X symposium through the online submission system. Once accepted and taking your preference into account, it will be decided by the Scientific Programme Committee whether your contribution will be presented as a poster or oral presentation. Your poster or presentation and full paper will be made publicly available through the NORM X website after the symposium and in the NORM X Symposium Proceedings which will be published by the IAEA.

The abstract submission page can be viewed on the website [www.normx2022.com](http://www.normx2022.com).

The final date for submission of abstracts is November 1<sup>st</sup> 2021. After submission, abstracts be reviewed and authors will be notified as soon as possible whether their submission has been accepted.

Your abstracts should clearly summarise the proposed content of the full paper, including any major scientific findings or conclusions. The acceptance of abstracts will be based on their scientific and technical quality and clarity of the information provided.

The presenting author will be required to register online as participant. The website will take you through the registration and abstract process. If in doubt, please contact the organisers at [info@normx2022.com](mailto:info@normx2022.com). Once registered, you will receive a confirmation e-mail.

## Call for sponsors/exhibitors

The treasurer likes to inform you on the options for advertising and promoting your company, your products and/or services during the NORM X Symposium. More than 250 radiation protection professionals, from all over the world, working in the field of NORM are expected to participate.

Please refer to the website for our sponsor & exhibition prospectus: [www.normx2022.com](http://www.normx2022.com).





## Registration

Registration for this symposium can be done via:

[www.normx2022.com/registration](http://www.normx2022.com/registration)

### Registration fee

Early bird fee (whole symposium)	€ 525,00	(until November 1 <sup>st</sup> 2021)
Normal fee (whole symposium)	€ 650,00	(until March 1 <sup>st</sup> 2022)
Last minute + on-site fee (whole symposium)	€ 775,00	
Participant for 1 day	€ 225,00	
Technical visit	€ 50,00	
Refresher course	-	no extra fee, registration obligatory

\* Please note that all registration fees are excluding 21% VAT.

### Registration Information

The registration fee includes:

- \* Participation to the whole scientific programme (including participation in refresher courses, but excluding a fee for technical visits)
- \* Access to the exhibition and sponsoring area
- \* Admission to the welcome reception on Monday
- \* Coffee and tea during the breaks





## Venue

The symposium will be held in the Jaarbeurs in Utrecht. The city is perfectly located in the centre of the Netherlands and easily accessible by public transport. The Jaarbeurs is a perfect location and provides unique experiences for all different meetings/conferences/events. This symposium will be located in a part of the Jaarbeurs called 'Supernova', where connecting and energising are key. The main room 'Progress' is an impressive conference room with its minimal design that will make an overwhelming impression.



## Accommodation

Different accommodation options, within different prices ranges, are available in close proximity of the symposium venue. More information on some of the accommodation options can be found on the symposium website [www.normx2022.com](http://www.normx2022.com).



## Sightseeing

Utrecht is the fourth-largest city of the Netherlands (population around 360,000) and located in the very centre. Utrecht's ancient city centre features many buildings and structures, several dating as far back as the high middle ages. Utrecht was the most important city in the Netherlands until the Dutch Golden Age, when it was surpassed by Amsterdam as the country's cultural centre and most populous city. Another landmark is the canal structure in the inner city: the 'Oude Gracht' is a curved canal, partly following the ancient main branch of the Rhine, lined with the unique wharf-basement structures that create a two-level street along the canals.

The inner city has largely retained its medieval structure, and it may be no surprise that Utrecht will celebrate its 900th anniversary in 2022. Due to its central position within the country, it is an important hub for both rail and road transport. It has the second highest number of cultural events in the Netherlands. Utrecht hosts several museums like the railway museum, the Catharijneconvent (religious art), the Speelklokmuseum (specialised in self-playing musical instruments, incl. the famous Dutch street organs). For those who have had enough of Utrecht, Amsterdam and Rotterdam are just a half hour train ride from Utrecht, while the famous Kröller Müller museum (large 'Van Gogh' collection and sculpture garden in national park 'Hoge Veluwe') is just an hour's drive away.

Due to the many beautiful and cultural excursions possible in Utrecht and its surroundings, the Local Organising Committee has decided not to include a specific excursion programme. Whether you would like to stay in Utrecht or explore more of the beautiful country, there is enough to see and to create your own personal excursion programme.





## General information

### *Symposium website*

[www.normx2022.com](http://www.normx2022.com)

### *Symposium location*

Jaarbeurs

Jaarbeursplein, 3521 AL Utrecht

<https://www.jaarbeurs.nl/en>

### *Symposium secretariat*

If you have any questions regarding this symposium please contact:

A Solution

Stadsplateau 7 - 8.22

3521 AZ Utrecht, the Netherlands

T: +31 85 902 28 33

E: [info@normx2022.com](mailto:info@normx2022.com)

