REMPAN eNEWSLETTER

ISSUE N 25 JULY 2022

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SPECIAL REPORT

On p.2-4 REMPAN Secretariat shares the updates for the first half of the 2022 about WHO response to the war in Ukraine, as pertains to preparedness for technological hazards, including radiation emergency risks.

EVENTS

NETWORK NEWS

On p. 5-11 REMPAN network members – collaborating centers and liaison institutions, as well as our partner organizations share their updates on relevant activities in radiation EPR field

INFORMATION

NEW PUBLICATIONS

The publications which we cannot miss are highlighted on Pp. 12-13. We encourage the network members to inform REMPAN secretariat regularly about their new publications pertaining to EPR.

To read WHO EURO Ukraine crisis strategic response plan for Jun - Dec 2022 - *click here*

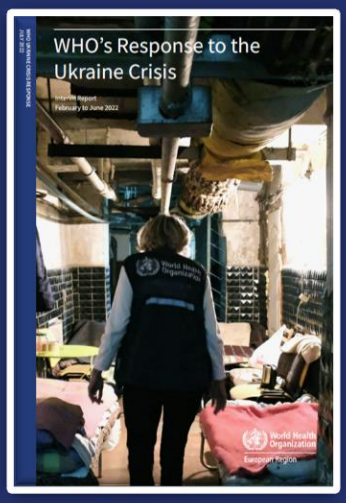
From the desk of REMPAN Coordinator:

Dear Reader,

Since 24 February 2022, the war in Ukraine has been in the centre of our concerns and preoccupations. It has caused large-scale disruptions to the delivery of health services and a near-collapse of the health system. But the crisis also saw an extraordinary mobilization and crisis response to a health emergency by WHO and its more than 100 partners. WHO is working through our offices in Ukraine and neighbouring countries, and with partners, to rapidly respond to the health emergency triggered by the war. We are delivering specialized medical supplies, coordinating the deployment of medical teams, and working with health authorities to minimize disruptions to the delivery of critical healthcare services within Ukraine and in countries hosting refugees and to deliver much-needed support on urgent health needs.

Thank you for your support and cooperation. Life-saving work would not be possible without your support. Thank you for being REMPAN!

Dr Zhanat Carr



Read the WHO report on what has been achieved in just over three months: click to download

Matthew L. Lim, MD, FACP - Unit Head, Biosecurity and Health Security Protection / Preparedness Division, WHO Health Emergency Programme

◆ WHO Response to Technological Hazards and Risks in Ukraine

WHO has been supporting the Ukrainian government in the conflict areas in eastern and southern Ukraine for years, assisting with risk assessments and mitigation of public health consequences of the unstable political situation. In late 2021 and early 2022, as political tensions increased, WHO personnel at country and regional levels, supported by WHO Headquarters in Geneva, worked closely with the Ministry of Health to strengthen contingency plans, including preparing the health sector for possible consequences of wider violence.

With regards to radio-nuclear and chemical hazards, starting from 24 Feb 2022, Technological Hazards Sub-Pillar (THSP) of the WHO Incident Management Support Team was set up for the Ukraine crisis response. The sub-pillar united elements of the WHO Emergency Programme with technical experts from the Chemical Safety and Radiation Health Units to conduct a rapid risk assessment of scientific, technological, and industrial sites placed at risk by the military operations. The risk assessment was assisted by the pre-existing work carried out by WHO and other partners in eastern Ukraine in the years of 2014-2018, as well as by strong professional ties with technical counterparts in Ukraine facilitated by WHO Country and Regional Offices. THSP team monitors public health intelligence reports, official notifications from the national competent authorities, other technical information, and activities of IAEA and other partners on a daily basis, using this information to make recommendations to WHO senior leadership and supports WHO Country and Regional Office personnel in their technical assistance to the government of Ukraine. When nuclear facilities in Ukraine came under attack or otherwise impeded in the conflict, WHO staff worked closely with IAEA counterparts and REMPAN experts to ensure that accurate and timely information was submitted to WHO leadership, and in turn, that WHO support for country preparedness was coordinated with a whole-of-government approach on the ground and in the affected neighbouring states. Among other tasks, WHO staff reviewed lists of countermeasures and personal protective equipment; advised Ukrainian counterparts on optimal contingency planning for radiation emergencies; implemented capacity building activities (training courses and webinars for specialists and first responders to chemical incidents and radiation emergencies) and contributed to response and recovery planning. Going forward, WHO continues to reinforce its technical capacity and ability to engage with counterparts in other international agencies as well as the government of Ukraine, and is ready to support Ukraine and other potentially affected WHO Member States in case of further chemical, biological, or radiation risks to populations in the conflict area. ◆

News from Ukraine

◆ Work priorities of the National Research Centre for Radiation Medicine (NRCRM), WHO Collaborating Centre for Radiation and Health (Ukraine), since 24 February 2022.

By Prof. D. Bazyka and Pros. A. Chumak (NRCRM, Kyiv, Ukraine)

The NRCRM has continued providing clinical care to the patients seeking radiotherapy and other treatment. In addition to the research and clinical work on the Chornobyl health consequences, the Center is now focusing on the two main priorities: capacity building of the national stakeholders on the nuclear emergency and psychological support of the Chornobyl population in the response to the current situation in Ukraine.

Capacity building

Under the frame of *REMPAN-4-Ukraine* webinar series, two capacity building activities were conducted:

- 1st training webinar held on 26 May "Medical and dosimetry management of radiation accidents in military operations area" . The first webinar was targeted on the iodine prevention, triage, diagnosis and treatment of acute radiation syndrome and radionuclides inhalation and clinical-prognostic meaning in the acute and remote period.
- 2nd training webinar held on 24 June "Individual radiation monitoring, triage and decontamination in case of a nuclear emergency" (link to video). The programme of the second webinar included basic topics on the radiation protection, health effects, methods and tools of radiological triage and survey, emergency scenarios, decontamination procedures and special experience on Fukushima and Chornobyl and different potentially dangerous situation (Chornobyl zone fires). Special attention was paid for radiation protection at martial law.

Psychological support for the Chornobyl population. The new scientific direction is being developed with focus on psychological correction and psychosomatic prevention of the Chornobyl populations further affected by the ongoing military operations. A working group is established on development approaches on counselling and psychological corrections for these populations.

WHO Framework on Mental Health and Psychosocial support in case of a nuclear emergency is now available in Ukrainian language. ◆

◆ Re-designation of WHO Collaborating Centers:

Re-designation of five WHO CCs was completed in the first half of 2022:

- Federal Office for Radiation Protection / *Bundesamt für Strahlenschutz* (BfS, Germany) - WHO Collaborating Centre for Ionizing and Non-Ionizing Radiation and Health – until Jan. 2026
- *Istituto Superiore di Sanità* (Italy) - WHO Collaborating Centre for Radiation and Health – until Jan 2026;
- Federal Office of Public Health, (Switzerland) - WHO Collaborating Center for Radiation Protection and Public Health - until March 2026;
- Radiation Effects Research Foundation (Japan) - WHO Collaborating Centre for Research on Radiation Effects on Humans – until March 2026;
- Fukushima Medical University (Japan) - WHO Collaborating Center for Radiation Disaster Preparedness, Response and Recovery – until May 2026;
- Institute for Radioprotection and Nuclear Safety (France) – WHO Collaborating Center for Radiological Protection – until July 2026.

More information on WHO Collaborating Centres:

https://www.who.int/about/collaboration/collaborating-centres

Interested in becoming a WHO Collaborating Center? Contact us! ◆

News from the WHO Secretariat

◆ National Stockpiles: Policy advice development

REMPAN Secretariat continued working with the Working Group Members towards finalizing the draft of the Policy advice. The draft was circulated among the network members for peer-review and comments have been incorporated during April-June 20022. The final draft is undergoing technical editing with the view of target publication date within nearest future.

◆ EPRBioDose-2022 Conference in Paris and the 6th BioDoseNet Coordination Meeting - 7-10 June 2022

WHO REMPAN and BioDoseNet networks were represented at the EPRBioDose-2022 conference held on June 7-10 by IRSN in Fontenay-aux-roses (Paris, France). The conference gathered 65 attendees from Europe, USA, North and South America, Singapore, Saudi Arabia who had an opportunity for scientific exchanges on new advances in biological dosimetry, retrospective biodosimetry, networks, EPR alanine dosimetry and EPR dating.

A Round Table discussion was organized with the focus on Ukraine crisis and potential consequences for consequences for biodosimetry networks role in response to a nuclear emergency. Next EPRBioDose conference will be organized in Japan in 2024.

The 6th Coordination meeting of the WHO BioDoseNet was organized in hybrid mode as a satellite event of the Conference. It was attended by 45 participants and have focused on the key updates from the members of this global biodosimetry and EPR laboratories network, as well as the needs and priorities of the BioDoseNet. Immense gratitude to Drs D. Lloyd, R. Wilkins, N. Maznik, M. Port, and F. Trompier for making this happen!

Photo: participants of the 6th Coordination Meeting of the WHO BioDoseNet - 10 June 2022 - Paris, France

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◆ Joint External Evaluation to Uzbekistan – May 16-20, 2022

An international team of experts visited Tashkent, Republic of Uzbekistan on May 16-20 with the purpose of evaluating national preparedness for all-hazards health emergencies. The experts worked with the national authorities and reviewed national legislation pertaining to the roles and responsibilities of relevant parties involved in preparedness and response to outbreaks, natural disasters, chemical incidents and radiation emergencies.

Uzbekistan is a major global uranium supplier embarking the development of the nuclear energy industry. The country's plans towards developing nuclear power infrastructure are based on the strong support of its government and its commitment to safety, security and non-proliferation. The country benefits from the support of IAEA under its technical cooperation framework aiming at the strengthening of the institutional capacity of Uzbekistan in the area of nuclear safety and security.

News from the Network Members

◆ U.S. CDC Participates in Cobalt Magnet 22 National-Level Exercise

By Adela Salame-Alfie, PhD, FHPS - Radiation Studies Section | Division of Environmental Health Science and Practice | National Center for Environmental Health | Centers for Disease Control and Prevention

From May 15–20, 2022, more than 300 staff members from the U.S. Centers for Disease Control and Prevention (CDC) participated in the Cobalt Magnet 22 (CM22) exercise. CM22 is part of a U.S. Department of Energy-led exercise series focusing on managing off-site consequences of a nuclear or radiological incident. The purpose of this exercise series is to validate emergency response plans for interagency technical and operational support to state, local, tribal, and territorial response to a nuclear or radiological incident.

Many local, state, and federal agencies participated in this 5-day exercise. The exercise involved a failed search mission for devices that transitions to a consequence management mission in response to a radiological dispersal device explosion.

CM22 provided CDC an opportunity to establish and staff an Incident Management System (IMS) that is organized, trained, and ready to respond to a nuclear/radiological incident. As part of the exercise, we simulated exercising activation of our IMS including leadership, scientific task forces and the Joint Information Center. The development of many injects by the planning team contributed to great engagement across the IMS and provided many lessons that can be incorporated in future planning. Overall, the feedback from the exercise participants was very positive. Many of the participants had not previously participated in a national level exercise that involved so many players and appreciated the complexity associated with such level of response. The exercise provided a good venue for task forces and other elements of the IMS to test their knowledge of basic radiation concepts and to collaborate in addressing a broad range of issues that public health would confront as part of a nuclear/radiological response. In summary, we were able to demonstrate that many programs at CDC (not just radiation scientists) will have a role to play during a nuclear/radiological response and that we have advanced our level of radiological emergency preparedness. ◆

◆ U.S RITN Updates

By Jen Aldrich, M.A.
Radiation Injury Treatment Network (RITN)
National Marrow Donor Program (NMDP)

The Radiation Injury Treatment Network® (RITN) is a national network of medical centers with expertise in the management of bone marrow failure and works with partners from other specialties to assist with managing acute radiation syndrome (ARS) and its health-related consequences. Updates:

- Joint ***REAC/TS and RITN pilot healthcare coalition course*** "Medical Management of Radiation Illnesses and Injuries" will take place on June 28-30 in San Francisco and on July 12-14 in Philadelphia. The purpose of this course is to give healthcare coalitions a basic knowledge about radiation response. This works in conjunction with the current training RITN center staff are offered to prepare to respond to a radiological/radiation incident.
- ***Advanced HAZMAT Life Support (AHLS) Radiological Incidents & Terrorism course*** on July 20 with the Chicago Region 9 healthcare coalition hosting. AHLS will be conducting one session on August 3, the day before the RITN Workshop, enabling participants to attend both if desired. Registration open: https://bit.ly/AHLSatRITN2022

Upcoming:

- 8th Biennial RITN Workshop: Past Informing the Present, Past Improving the Plan for a Rad/Nuc Incident, August 4–5, 2022. See www.ritn.net ◆

News from the Network Members

◆ The 3rd Swiss-German Workshop on "Clinical Management of Irradiated Patients" - *by Nina Mosimann and Daniel Storch (SFOPH)*

In order to ensure the preservation of knowledge on the treatment of severely irradiated persons in Switzerland, the Federal Office of Public Health (FOPH) together with the Swiss National Accident Insurance Fund (SUVA) and the Swiss Federal Nuclear Safety Inspectorate (ENSI) established in 2019 a collaboration with the University Hospital Zurich (USZ).
Within the framework of this cooperation, in April 2022 the 3rd meeting on "Clinical Management of Irradiated Patients" was held. One goal of these meetings is to create, strengthen and maintain a national network on this topic and to exchange knowledge and information.

At this current event, a short overview on the reference scenarios and national risk analysis of disasters and emergencies in Switzerland along with scenarios of smaller scale incidents was given and the role and background of the consulting physicians in the "information centre radioactivity" was presented and discussed. The Coordinated Medical Service (CMS) as the national network for the control and coordination of medical services in all situations (ordinary, special and extraordinary) presented the current challenges and activities concerning decontamination hospitals and trainings. In addition, USZ presented the recent additions to the information website for the treatment of severely irradiated persons: https://www.usz.ch/strahlenunfall/ .

As Collaborating Center of the WHO and as a special highlight, Prof. Andreas K. Buck from the University Hospital of Würzburg gave an exciting insight into the Würzburg Radiation Accident Centre and introduced the key structures in the radiation accident management in Germany. The subsequent discussion showed that a cross-border exchange of information and ideas can be very valuable for both sides.

According to the feedback of the participants as well as based on the lively discussions after the presentations, it was concluded that there is indeed a great need for an exchange among the involved bodies. Thus, the next meeting will already take place at the end of this year. ◆

◆ UK PHE rebranded to UKHSA: Change of email addresses !

- by Liz Ainsbury (UKHSA)

As previously reported, UK colleagues previously working for Public Health England transferred to the new UK Health Security Agency in October 2021. From June 2022 the UKHSA email addresses are now live, so please start to update your contact lists. The only change is from 'PHE' to 'UKHSA', e.g. liz.ainsbury@phe.gov.uk will now become liz.ainsbury@ukhsa.gov.uk. Please do note, though, that PHE email addresses will remain in use for some time, so there is no need to worry about emails sent to the wrong address going missing. Further to the establishment of UKHSA, colleagues at the Radiation, Chemical and Environmental Hazards Division in Chilton, Oxfordshire, have been updating some of the information about ionising radiation available online aimed at members of the public. Two recent examples are 'Nuclear emergencies: Information for the public' and 'Basic concepts of radiation' and these can be found online newly in accessible format, here: Nuclear emergencies: information for the public - GOV.UK (www.gov.uk). The 'nuclear emergencies' information covers topics including the basics of how radiation exposure can occur, preparation for an emergency, and some of the preventative actions people might be asked to take, all in easily accessible language. ◆

News from the Network Members

◆ Hospital-wide decontamination exercise in April 2022, Würzburg, Germany *- by Prof. Andreas Buck and Dr Tanja Weber (UKW, Germany)*

In April 2022, at the University Hospital Würzburg (UKW) a hospital-wide decontamination exercise was set up in collaboration with different fire departments, external emergency ambulances and the WHO REMPAN Collaborating Center Würzburg. The purpose was to practically train the decontamination of volunteers simulating a larger scale ABC accident scenario. In addition, the transfer of decontaminated patients to the UKW emergency care unit was simulated. Several issues concerning the patient handling and the communication and interaction when handing over the patients from one unit to the next were discovered and will be taken into account in the next exercise. The image shows a professional crisis center which is housed in a container (upper left). The image in the upper right shows leading staff organizing technical equipment, medical care and nursing as well as supervisors from fire departments and local police. In the lower row, decontamination of a volunteer is shown.

New Publication:

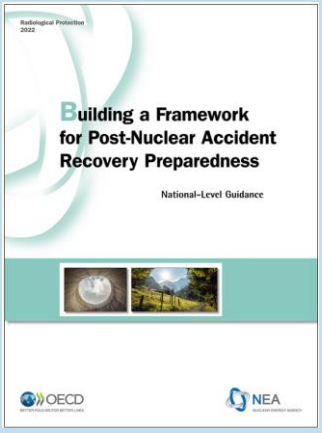
Göring, L., Schumann, S., Muller, J., Buck, A. K., Port, M., Lassmann, M., Scherthan, H., & Eberlein, U. (2022). Repair of alpha-particle-induced DNA damage in peripheral blood mononuclear cells after internal ex vivo irradiation with 223Ra. Eur J Nucl Med Mol Imaging. https://doi.org/10.1007/s00259-022-05860-3

In this study we investigated the induction and repair of DSB damage in peripheral blood mononuclear cells (PBMCs) as a function of the absorbed dose to the blood following internal ex vivo irradiation with [223Ra]RaCl2 Blood samples of ten volunteers were irradiated by adding [223Ra]RaCl2 solution with different activity concentrations resulting in absorbed doses to the blood of 3 mGy, 25 mGy, 50 mGy and 100 mGy. PBMCs were isolated, divided in three parts and either fixed directly (d-samples) or after 4 h or 24 h culture. After immunostaining, the induced γ-H2AX α-tracks were counted. The results obtained suggest that induction and repair of the DSB damage depend on the absorbed dose to the blood. Repair rates were similar to what has been observed for irradiation with low linear energy transfer. ◆

◆ Building a Framework for Post-nuclear Accident Recovery Preparedness

- by Jan-Hendrik KRUSE, Division of Radiological Protection and Human Aspects of Nuclear Safety - Nuclear Energy Agency (NEA/OECD)

NEA launched its new report "Building a Framework for Post Nuclear Accident Recovery Preparedness: National-Level Guidance (NEA Publication N°7582) produced by the Expert Group on Recovery Management created in 2019 by the Committee on Radiological Protection and Public Health, with the objective of assisting in planning for a recovery by producing guidance on how to develop a post-accident recovery management framework which can be adapted to national conditions. The Report emphasizes the importance of planning for a long-term recovery along with preparedness arrangements for emergency response. More information on the report and the launch event is available on the NEA website. ◆



News from the Network Members

- **Updates from Radiation and Nuclear Countermeasures Program (RNCP), National Institute of Allergy and Infectious Diseases (NIAID) National Institutes of Health (NIH) - Rockville, MD, USA**

- by Andrea L. DiCarlo-Cohen, PhD, Director RNCP, NIAID/NIH

Overlapping Science in Radiation and Sulfur Mustard Exposures of Skin and Lung: Consideration of Models, Mechanisms, Organ Systems, and Medical Countermeasures (January 13-14, 2022).

The RNCP, in coordination with NIAID Chemical Countermeasures Research Program (CCRP) and the BARDA Radiation and Chemical Countermeasures Programs hosted a workshop to explore common research themes in the radiation and chemical threat spaces. The goals of this interaction were to: 1) examine and compare pathologies in pulmonary and cutaneous injuries following chemical or radiological/nuclear insult, 2) discuss animal models and medical countermeasures currently used in the chemical or radiological/nuclear space; and 3) identify gaps, challenges, and needs for translational and regulatory applications in both mission spaces. The organizers are putting together a meeting report and preparing to publish manuscripts in a special issue in the Journal of Disaster Medicine and Public Health Preparedness (Projected fall 2022 publication date).

Workshop: Sex Differences in Radiation Research (April 26-27, 2022).

The goals of this workshop were to examine sex differences within radiation animal models and understand how these may affect radiation medical countermeasure (MCM) development; explore sex differences in biodosimetry and biomarkers used to assess the acute radiation syndrome, delayed effects of acute radiation exposure, and predict major organ morbidities. Also discussed were the challenges in medical research lacking representation from both sexes. Over 200 participants were engaged in this virtual meeting, and a published meeting report is anticipated in winter 2022.

Photo: the speakers of the workshop Sex Differences in Radiation Research

Radiation-Induced Multi-Organ Dysfunction (June 7-8, 2022).

The objectives of the workshop were to explore radiation-induced multi-organ injury, in particular the connections and underlying mechanisms driving injury to the affected organs, to explore how various treatments can ameliorate these injuries. A meeting report is being prepared for peer-reviewed publication. ◆

Upcoming Event

Gastrointestinal Acute Radiation Syndrome (GI-ARS) Workshop (August 29-30,2022). There are 4 FDA-approved products for hematopoietic ARS; however there remains an unmet need for approaches addressing gastrointestinal (GI)-ARS and injuries impacting other organ systems. There are limitations to studying the natural history of GI-ARS because of a lack of clear consensus on the nature and models of the injuries. It is also important to look to other areas of clinical experience with GI diseases, to be better informed on state-of-the-art practices to assess and treat similar injuries. Further, animal model details and radiation exposure protocols vary from site to site in terms of biomarkers, polypharmacy, bone marrow shielding, and radiation quality. The workshop will bring together US government funding and regulatory agencies as well as subject matter experts from the clinic, industry, and academia to address these and other topics, in support of accelerating GI-ARS MCM development along the critical path toward US FDA licensure.

Registration link ◆

News from the Network Members

◆ Launch of WINEPRI International group of expertise "Women In Nuclear in Emergency Preparedness and Response Initiative"

– by Ms. Khadija Bendam

The WiN Global Group of Expertise WINEPRI "Women in Nuclear in Emergency Preparedness and Response Initiative" held its official launch event on 10 Feb 2022 under the theme: "Leadership of Women in Emergency Preparedness and Response and Mechanism for Attracting Women and Young Generation to EPR field". Chaired by H.E Leila Benali, Minister of Energy Transition and Sustainable Development of Morocco, the launch was co-organized by WiN Global, WiN Morocco, and the National Center for Energy, Sciences and Nuclear Techniques (CNESTEN) in Morocco. CNESTEN is the partner organization of WINEPRI. The event gathered nuclear industry leaders, including:

- Dominique Mouillot, WiN Global President;
- Rafael Mariano Grossi, IAEA DIrector General;
- Khalid El Mediouri, CNESTEN Director General;
- Lydie Evrard, IAEA Deputy Director General and Head of the Department of Nuclear Safety and Security;
- Shaukat Abdulrazak, IAEA Director of Division for Africa, Department of Technical Cooperation;
- Ms. Khadija Bendam, WINEPRI Leader, WiN Morocco President, WiN Global member Board and Moroccan WHO REMPAN contact point.

The speakers affirmed their full and continued support for the promotion of women's leadership in nuclear science and technology.

Ms. Bendam highlighted the mission and objectives of this group to strengthen preparedness and response mechanisms to nuclear and radiological emergencies. She also emphasized the important role that women play in the development of innovative and sustainable solutions in this area. She concluded her speech by presenting the main action plan for WINEPRI.

Would you like to join WINEPRI or receive further information? Contact Ms Bendam at: bendam87@yahoo.fr ◆

◆ US National Academies of Sciences: Information-Gathering Meeting: Preventing Nuclear Terrorism – 21 June 2022

This study responds to a congressional mandate in the FY2021 National Defense Authorization Act, which calls for the National Academies to address the adequacy of strategies to prevent, counter, and respond to WMD terrorism, and identify technical, policy, and resource gaps. The nuclear threats assessment encompasses state-sponsored and non-state actors from acquiring or misusing the technologies, materials, and critical expertise needed to carry out nuclear attacks, including dual-use technologies, materials, and expertise. The nuclear threats study will result in a report with consensus findings and recommendations to advise Congress, Department of Defense, National Nuclear Security Administration, and other relevant agencies.

Video recordings of the meeting are available here: Assessing and Improving Strategies for Preventing Countering and Responding to Weapons of Mass Destruction Terrorism Nuclear Threats Information Gathering Meeting . ◆

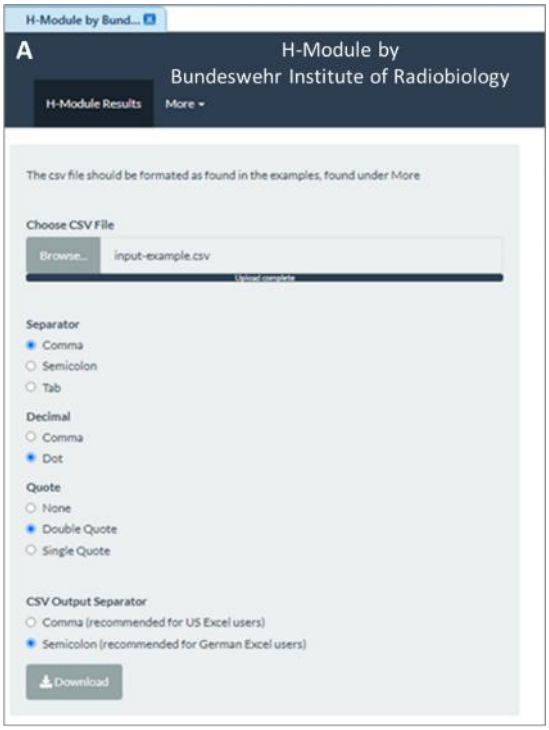
News from the Network Members

◆ Server-based H-Module App for high-throughput ARS diagnosis

– by M. Abend, M. Port – Institute for Radiobiology, Munich, Germany

The Bundeswehr Institute of Radiobiology (BIR) recently developed an App, predicting the acute radiation syndrome (ARS) severity based on lymphocyte and granulocyte counts measured within the first three days after irradiation (Majewski et al. 2020). BIR developed this mobile software App using a unique database comprising real case histories. After entering blood cell counts, diagnosis and treatment options are generated.

As a disadvantage, blood cell count changes for each individual must be entered sequentially. Now, with the server-based H-Module version, a datafile in a certain format (provided for download at folder "More", figure 1A) can be used for input of hundreds and thousands of patient data. The server-based tool automatically generates an output datafile including diagnosis and treatment options (figure 1B). This tool was developed due to discussions with Ukrainian clinicians and as a response to radiological and nuclear threats in the context of the Ukraine war. Feel free to use the test version (https://h-module.shinyapps.io/H-Module/) and let us know about improvements.



B

id	hars	likelihood	diagnosis	recommendation	Lymphocytes (G/l) day1
1	H2-4	76% - 96%	Moderate to fatal hematological damage	Hospitalization, hematological facility, ICU	0,62
2	H1-4	77% - 96%	Mild to fatal hematological damage	Inpatient surveillance	0,6
3	H0	52%	Radiation exposure unlikely	None	1,82
4	H1-4	93% - 96%	Mild to fatal hematological damage	Inpatient surveillance	0,92

Fig. 1: A server-based tool (A) requires input data of blood cell count changes generated during the first three days after irradiation in a certain format, which can be downloaded as an example at the folder called "More". (B) Output data provide clinical useful information regarding diagnosis and treatment recommendations. The list shown is truncated (input blood cell counts are deleted) for convenience reason.

REFERENCE: Matthäus Majewski, Marco Rozgic, Patrick Ostheim, Matthias Port, Michael Abend. A New Smartphone Application to Predict Hematologic Acute Radiation Syndrome Based on Blood Cell Count Changes-The H-module App. Health Phys. 2020 Jul;119(1):64-71. doi: 10.1097/HP.0000000000001247.

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◆ REAC/TS MicroREM Courses

- by C. Iddins, REAC/TS – Oak Ridge, TN

REAC/TS has hosted three MicroREM Courses since July 2021. This 12-hour virtual course is an abridged version of REAC/TS' renowned Radiation Emergency Medicine (REM) class and focuses on the fundamentals of medical care and management of patients involved in radiological/nuclear incidents. These courses educated over 200 participants from around the world representing a variety of medical disciplines, health physics personnel, emergency managers/planners, and researchers from various organizations including governmental agencies, industry, universities, prehospital and hospital agencies and facilities. Future courses may be located in the Continuing Medical Education Section of the REAC/TS website:

https://orise.orau.gov/reacts/continuing-medical-education/index.html

◆ Aid in radiological emergency response tools

REAC/TS has recently created several new tools to aid in radiological emergency response, including infographics to assist with patient radiological surveys and radioactive contamination survey instrumentation. All of REAC/TS graphic tools are free for download on their website: https://orise.orau.gov/resources/reacts/references.html ◆

News from the Network Members

◆ Updates from the WHO CC Urals Research Center for Radiation Medicine – *by Prof. A. Akleyev (URCRM, Chelyabinsk, Russia)*

In 2022 a new three-year scientific project was started in the Biophysics laboratory. It is entitled "The development of a series of voxel phantoms that imitate skeleton sites with active hematopoiesis for people of different sex and age starting from birth, to assess the levels of the bone marrow exposure due to bone-seeking beta-emitting radionuclides". The project is performed in the framework of the Russian Federal Targeted Program "Provision of nuclear and radiation safety for the period 2016-2020 and for the period up to 2030".

In 2022 a new research project was started in the Laboratory of Ecological Patho-psychology "Evaluation of the role of non-radiation factors in the genesis of mental disorders in people affected by accidental radiation exposure, in the long-term period after the exposure". The project will focus on non-radiation (mainly psychosocial and informational) factors that influence the development of mental disorders in accidentally exposed people.

REFERENCE (in Russian): Психопатологические особенности астенического синдрома у лиц, подвергшихся аварийному радиационному воздействию
Т. Э. Кантина, Е. Ю. Буртовая, Е. А. Литвинчук / doi.org/10.30629/2618-6667-2022-20-1-58-66.

On 6-7 December 2022 the URCRM will hold the **International Research-to-Practice Conference "Chronic radiation exposure: late medical and biological effects".**
The main objective of the conference is to give an opportunity to discuss a wide range of issues relevant to the long-term effects of low dose-rate chronic radiation exposure of humans. Close attention will be paid to the molecular - genetic and epigenetic effects of chronic exposure. It is also planned to give consideration to medical, biological, epidemiological, environmental, dosimetric and socio-psychological aspects of chronic human exposure. We invite everyone who is willing to share their knowledge, experience and expertise to participate in the Conference. Detailed information about the Conference could be found at www.urcrm.ru.◆

◆ Strengthening biological dosimetry at the NRCERM (EMERCOM of Russia), Saint-Petersburg, Russia – *by E. Neronova*

The Laboratory of Genetical Research and Biodosimetry at the NRCERM EMERCOM of Russia continues strengthening the Center biodosimetry capacity. The Lab reports on improving existing methods and introducing new techniques. The Lab established calibration curves for different cytogenetic methods: dicentrics , micronuclei and PCC fragments after gamma irradiation. The dose dependence equations have been validated in vitro and confirmed the adequacy of the developed models. Analysis of dicentrics was performed in two patients with clinical symptoms consistent with radiation overexposure (due to CT scan). New calibration curve for dicentrics was applied and the exposure was ruled out. Therefore, the use of a battery of cytogenetic tests expands the laboratory's capabilities in the field of biological dosimetry in various exposure scenarios.

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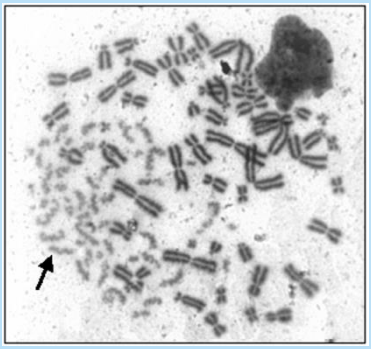
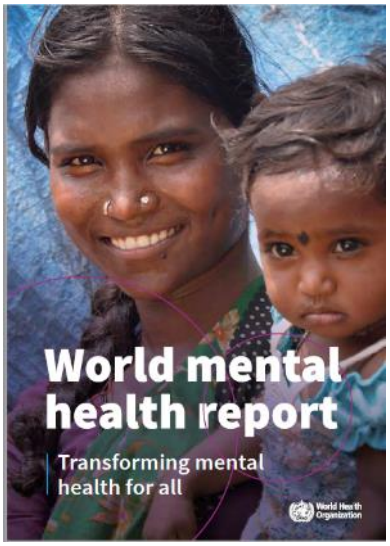


New Publications

◆ World mental health report: Transforming mental health for all



Mental health is critically important to everyone, everywhere. All over the world, mental health needs are high but responses are insufficient and inadequate. The *World mental health report: transforming mental health for all* is designed to inspire and inform better mental health for everyone everywhere. Drawing on the latest evidence available, showcasing examples of good practice from around the world, and voicing people's lived experience, it highlights why and where change is most needed and how it can best be achieved. It calls on all stakeholders to work together to deepen the value and commitment given to mental health, reshape the environments that influence mental health, and strengthen the systems that care for mental health. Link to download the report ◆

◆ Launch of a New WHO online training course on Mental Health and Psychosocial Support in Emergencies.

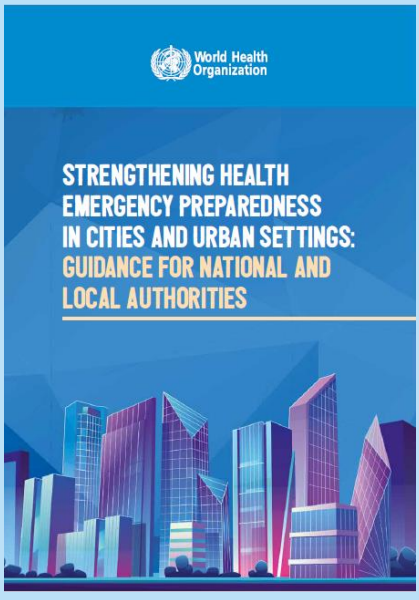
The online course is designed to strengthen the competencies of health sector actors working in emergencies to establish, support and scale-up MHPSS in countries. The content presents existing practical, evidence-based, scalable tools and practice-led approaches for the successful implementation of projects to strengthen Mental Health and Psychosocial Support (MHPSS) in emergencies. The primary audience of this course is health sector staff involved in response to emergencies and seeking to integrate MHPSS into their programmes. This includes WHO staff and humanitarian actors from UN agencies, NGOs and governments. In addition, professional officers working in areas such as NCDs, Reproductive Health and HIV in WHO country offices, humanitarian organizations and Ministries of Health will benefit from the course modules. The 12-module course can be taken wherever, whenever you want on the popular OpenWHO.org learning platform, all at once or in several sittings. You have the opportunity to earn a certificate for test-based achievement, as well as a digital badge to share your achievement with your networks. Extra module was added to address MHPSS in nuclear emergencies. The course will be available later in additional languages.

You can access the MHPSS training here: https://openwho.org/courses/mental-health-and-psychosocial-support-in-emergencies/ ◆

◆ Strengthening health emergency preparedness in cities and urban settings: guidance for national and local authorities (WHO, 2022)

This new guidance document is an operational accompaniment to the WHO Framework on Strengthening Health Emergency Preparedness in Cities and Urban Settings. Aimed at both national and local authorities, it offers approaches and actions that a be adapted to various contexts to support policymakers working across all sectors relevant to health emergency preparedness at the city/urban level.

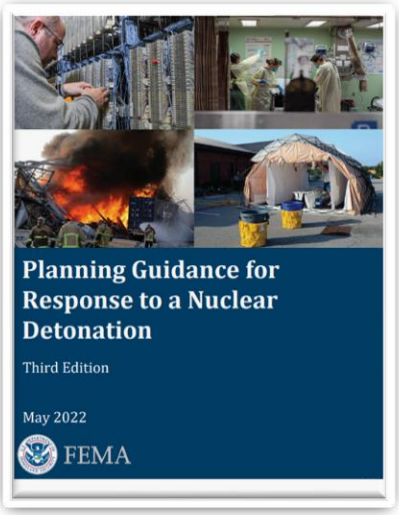
More information to be found online: Strengthening health emergency preparedness in cities and urban settings: guidance for national and local authorities (who.int) ◆



New Publications

◆ Planning Guidance for Response to a Nuclear Detonation – Third Edition (FEMA, May 2022)

The updated version of the guidance was developed by a federal interagency committee led by the Federal Emergency Management Agency (FEMA) CBRN Office with representatives from the Department of Homeland Security, Science and Technology Directorate, the Department of Energy, Department of Health and Human Services, the Department of Defense, and the Environmental Protection Agency. The Third Edition (2022) has been updated and expanded to provide guidance for a wider range of nuclear detonations, including larger detonations and air bursts. It also incorporates new research, best practices, and response resources. Additionally, this edition includes a new chapter on the Integrated Public Alert & Warning System (IPAWS), which enables state, local, tribal, and territorial (SLTT) officials to send warnings and key messages during the response. Link for download ◆



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https://www.who.int/campaigns/world-patient-safety-day/2022

◆ Proceedings of the REMPAN-16 Coordination Meeting are published!

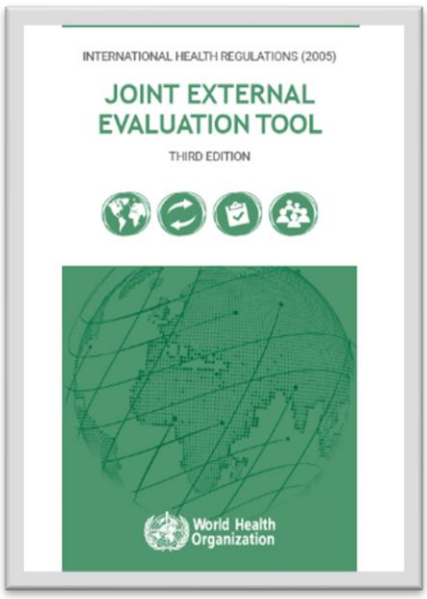
The Proceedings of the 16th Coordination meeting of WHO REMPAN held on-line in March 2021, have been published in the Special Issue (SI) of the Environmental Advances Journal /Elsevier) entitled: **Global Radiation Emergency Preparedness and Response: Public Health Perspective**.

The Guest Editors R. Wilkins, E. Herrera Reyes and E. Ostroumova worked tirelessly with the Editorial Office, authors and reviewers of the Journal to bring the Proceedings to you as soon as possible. Thank you to all of your who contributed to this SI !

REMPAN is supporting Organization's efforts towards strengthening global preparedness of public health sector for radiological and nuclear emergencies. Set up in 1987, the network is a global platform for sharing information, facilitating collaborative research and sharing capacity building efforts.

Access the Special Issue: Environmental Advances | Global Radiation Emergency Preparedness and Response: Public Health Perspective | ScienceDirect.com by Elsevier ◆

New Publications



◆ Joint external evaluation tool: International Health Regulations (2005) - third edition

In 2020, the IHR Review Committee and the Independent Oversight and Advisory Committee for the WHO Health Emergencies Programme expressed the need to adjust the IHR monitoring, and evaluation instruments based on lessons learned from the COVID-19 pandemic. In early 2021 the JEE Secretariat began the process of systematic review of the tool. These efforts included a consultative meeting of March 2021 to identify improvements of the JEE tool based on lessons from COVID-19 pandemic, followed by constitution of a technical working group composed of global experts from WHO, partner institutions and Member States to review and revise the JEE tool based on the recommendations of the technical consultative meeting. These changes and improvements made by the technical working group are reflected in the third edition of the JEE tool.

The main changes within the third edition of the JEE tool include the split of the technical area National legislation, policy, and financing into two technical areas (Legal instruments and Financing); the drop of the technical area previously titled Reporting and the move of indicators to the technical area IHR coordination, National IHR Focal Point and advocacy; and the merging of two previous technical areas (Emergency preparedness and Emergency operations centre) into a single one named Health emergency management.

Food safety; Linking public health and security authorities; Chemical; and Radiation technical areas were not changed. Minor edits were made in some attributes of Biosafety and Biosecurity technical area.

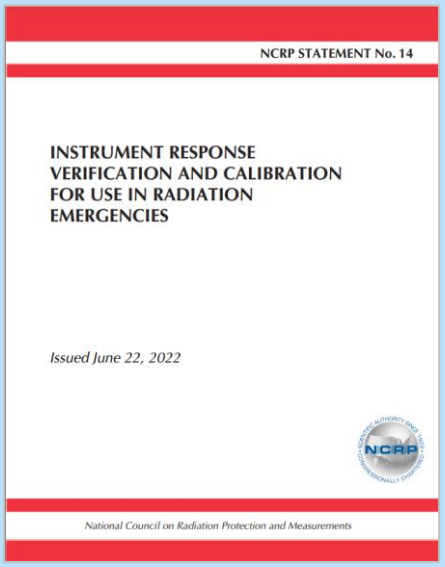
Overall, the number of technical areas is unchanged at 19, and indicators increased from 49 to 56 indicators.

The new tool is expected to improve quality of assessment of preparedness capacities of Member States for timely detection, prevention, and effective response to public health emergencies.

Link to download

◆ US National Council on Radiation Protection and Measurements Statement No. 14: Instrument Response Verification and Calibration for Use in Radiation Emergencies (NCRP, 2022)

The Statement provides recommendations for maintaining the readiness of radiation detection equipment for use in a large-scale nuclear or radiological emergency. It covers instrument inventories retained by municipal, county, and state entities, which may provide valuable and actionable information during an emergency, but are not otherwise routinely used for regulatory compliance or health physics applications. The statement describes a tiered approach that includes periodic laboratory calibrations and source-response checks, for end-users to attain confidence in their equipment while working within their available funding and resources. Download link ◆



Upcoming events, Training courses

- **NEA International Radiological Protection School (IRPS): 22-26 August 2022 – Stockholm, Sweden**

NEA has been organizing the IRPS since 2018 in an effort to equip early- to mid-career radiological protection experts with a deep understanding of the spirit of the system of radiological protection, along with how it is intended to be applied in diverse and newly emerging circumstances, and how it is evolving on the basis of lessons from experiences. To this end, a broad faculty is assembled each year from many of the experts that have worked for the establishment, the implementation and the evolution of the RP system over the past decades. More than 100 early-to mid-career radiological protection experts have participated in the three IRPS editions since 2018.

- It is organized in a Cooperation of the Swedish Radiation Safety Authority and the Centre for Radiation Protection Research of Stockholm University.
- Please find more detailed information on the format, venue and programme of the IRPS **here**. Questions? Contact irps@oecd-nea.org.

- **ICRER 2022 - 5th International Conference on Radioecology & Environmental Radioactivity** - 4-9 Sept. 2022 – Oslo, Norway https://www.icrer.org/
- **European Radiation Protection Week (ERPW-2022):** 9 to 14 October 2022, Estoril, Portugal - https://erpw2022-portugal.eu

- **NEA Workshop on preparedness for post-nuclear accident recovery** - 27-28 October 2022 – Paris, France (hybrid event) https://www.oecd-nea.org/jcms/pl_68159/workshop-on-preparedness-for-post-nuclear-accident-recovery

- **The ICRP 2021+1 International Symposium on the System of Radiological Protection** - 07-10 Nov 2022 – Vancouver, Canada https://icrp2021.com/

- **NEA Nuclear Risk Communication Training Course** will take place in Bratislava, Slovak Republic on 7th-9th December 2022. This training course focuses on communicating risk on a daily basis. Its aim is to improve the effectiveness of risk communication in order to enhance public understanding. Over three days participants will interact with communication experts and technical professionals working in nuclear energy organizations to learn the fundamentals of risk communication. Programme details and a link to register are here (oecd-nea.org)

- **WHO on-line training courses**

  - **OpenWHO platform** offers hundreds of on line training programs on various topics including those on preparedness, response, risk assessment and clinical management of health emergencies
  - **WHO Academy / News**

Disclosure

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