RADIATION EMERGENCY MEDICAL PREPAREDNESS AND ASSISTANCE NETWORK

REMPAN e-NEWSLETTER

World Health Organization

Issue 3 July, 2011

Editorial

WHO role in response to the Fukushima nuclear accident

Dear Colleagues, Dear Friends,

Just a month before Fukushima we all met in Japan for the 13th meeting of WHO REMPAN hosted by Nagasaki University. We had a chance to learn about Japan's national capacity for response to nuclear emergencies. Shortly after our meeting, March 11, the world shuddered in horror. Once again, we were reminded that human beings are much weaker than the powers of nature. A devastating earthquake and tsunami led to loss of thousands of lives and homes, resulting in a major environmental disaster. As a result of damage to the Daiichi NPP, the risk of direct human exposure to radiation has received priority attention. The WHO worked closely with IAEA and other international partners, its **Western Pacific Regional Office (WPRO)** (http://wpro.who.int/) and WHO centre in Kobe, Japan, supported by the REMPAN network in the response to the event. WHO WPRO field mission was deployed to Japan to collect more information from the areas affected by the earthquake and tsunami to further understand the health situation and needs.

To date, no radiation injuries have been reported as a result of the accident. However, some 4000+ workers of TEPCO involved in mitigation works at the Daiichi NPP remain at a higher risk. According to a press release by TEPCO (June 30, 2011) evaluation of external and internal exposure was performed for each worker. The results were reported to the Ministry of Health and posted on the TEPCO website (www.tepco.co.jp/en/index-e.html).

WHO Member states requests in first two months of the response focused on two areas: travel advisory (including safety of travel to Japan; border control measures; screening of passengers, aircraft, cargo, ships) and technical advice on interventions (evacuation, sheltering, KI use; relocation; interpretation of monitoring data and radiation protection limits/values; food and drinking water safety; mental health impact, and public information). Many thanks to all REMPAN members for supporting WHO response to the accident. We held regular telephone conferences with the core group of technical experts and all of you have offered technical assistance in response to the emergency in Japan.

The lessons learned from Fukushima complement the knowledge gained after Chernobyl accident about the implications of living in a world of increasing interdependence. The nature of the work on radiation emergencies requires a high level of coordination not only between UN agencies but also with all relevant stakeholders in the affected nation. ◆

Dr. Zhanat Carr
REMPAN Coordinator

In this issue

Operation room in session – WHO Strategic Health Operations Centre (SHOC) – Geneva, Switzerland, 2011

REMPAN Response to Fukushima

Biodosimetry for workers at Fukushima Nuclear Power Station

By Yumiko Suto and Makoto Akashi, Research Center for Radiation Emergency Medicine, National Institute of Radiological Sciences (NIRS), Chiba, Japan

The **National Institute of Radiological Sciences (NIRS)** is the national center for radiation emergency medical preparedness in the nuclear disaster prevention system of Japan. Since the Fukushima Nuclear Power Station accident on March 11, 2011, NIRS has received many requests by e-mail and phone from colleagues throughout the world including those of WHO BioDoseNet.

Currently three staff members of the Research Center for Radiation Emergency Medicine have been on standby for biodosimetry of workers at the accident site with storage of as many as 1,000 Dicentric Analysis tests and two sets of AXIO Imager.Z2 (Carl Zeiss, Inc.) equipped with a CCD camera and Metafer 4 (MetaSystems GmbH), one of which has been lent gratuitously by courtesy of these companies.

In principle, following the IAEA Technical Reports Series No. 405 "Cytogenetic Analysis for Radiation Dose Assessment", Vienna, 2001 (http://www-pub.iaea.org/MTCD/publications/PDF/TRS405_scr.pdf), we perform cell culture, and accomplish a triage-scoring on the day of cell fixation and dose estimation with our calibration curve using a Cs-137 source within a day or two. When necessary, members of the Japan Chromosome Network consisting of nine laboratories will be asked for assistance.

For three months, we received nine blood samples from workers for Dicentric Analysis. Fortunately their doses of external exposure were relatively low, and thus we scored 100 cells / donor for triage and 1,000 cells / donor for dose estimation.

Dicentric Analysis – NIRS, Chiba, Japan

In this instance we have simultaneously faced a nuclear disaster and large earthquakes covering a wide area of our country; the transportation system was paralyzed and the supply of electricity was stopped for a while. Moreover, laboratories and suppliers (machines, reagents, and buildings) were damaged in Tohoku district; some staff members of our center became refugees in the first few days after the earthquakes.

As a lesson learned, in future a much better backup system should be established in Japan to prepare for the worst scenario. Lastly we are very thankful for the offers of help extended to us so far. ◆

REMPAN Response to Fukushima

Chinese Response Actions to Nuclear Accident at Fukushima

By Yuan Long, Chinese Center for Medical Response to Radiation Emergency (CCMRRE), Beijing, China

After the earthquake nuclear accident in Japan, the **Chinese Center for Medical Response to Radiation Emergency (CCMRRE)** initiated emergency medical response actions immediately. These included personal monitoring of the external contamination of people coming from Japan, radionuclide monitoring of food and water contamination, preparedness of nuclear emergency medical assistance team and health risks assessment.

Monitoring of water – Organized by CCMRRE, Beijing, China

Besides, CCMRRE also established specific programs and public communication strategy, provided general guidance and technical support for national radiological health organizations, and informed the public to use various media, e.g. network, video, audio, newspapers and publications like "How to Protect for Public during Nuclear or Radiation Emergency" and "What is Medical Response during Nuclear or Radiation Emergency", which played a key role in preventing unnecessary fear or panic. ◆

REMPAN Response to Fukushima

Early HPA response to Fukushima – In brief

By Nicholas Thompson, Health Protection Agency (HPA), Chilton, Didcot, Oxon, UK

As soon as news of the Great Eastern Japanese Earthquake was picked up (prior to the alert at Fukushima being raised) a core response group was set up at the **Health Protection Agency (HPA)** Centre for Radiation, Chemical and Environmental Hazards (CRCE) headquarters in Oxfordshire, to consider the implications from a radiological standpoint for both UK citizens abroad and indirect impacts on the UK. An IAEA alert was received shortly afterwards detailing the automatic shutdown of reactors in the Fukushima prefecture. The aim of the group shifted to gathering information on the incident, making initial assessments and providing advice and information to the UK government.

There was a need to understand the implications of any potential releases to ensure that British citizens in Japan would be adequately protected should the situation worsen. A system of modelling the potential dose impact from further releases over each coming 24 hour period was established between 4 organisations:

- Office for Nuclear Regulation (ONR) provided details of potential releases from a damaged reactor and a fuel storage pond
- Meteorological Office used the NAME III model to predict the atmospheric dispersion and deposition of these releases using meteorological forecast data for Japan
- HPA used NAME results to estimate the potential radiation doses for five key Japanese cities and maximum values by distance
- **Radiation Incident Monitoring NETwork (RIMNET)** distributed monitoring data and HPA dose estimates to key stakeholders within UK Government

This ensured that, should a release occur, decision makers would have prepared material available for real weather conditions. The results of the daily assessments were analysed to confirm that the protective action in Japan was adequate. The first measurement of minute traces of iodine-131 in the UK occurred at HPA monitoring stations in Glasgow and Oxfordshire. In measurements averaged over nine days, 11 micro-Bq / m^3 of iodine-131 were discovered. Later, on March 28, using very high volume air sampling techniques, some 300 micro-Bq / m^3 was measured.

Changing of an air sampler filter – HPA Centre for Radiation Chemical and Environmental Hazards – Chilton, UK

HPA published monitoring results from the Environment Agency, the Scottish Environment Protection Agency, the Northern Ireland Environment Agency and results from own monitoring locations in the UK on the web. HPA stressed that the minute levels detected were not a threat to public health. HPA answered requests for advice and services from companies and individuals. An algorithm for answering health related calls from the public was set up on an existing telephone system **(NHS Direct)**, in addition HPA set up a FAQ section: http://www.hpa.org.uk/Topics/Radiation/UnderstandingRadiation/UnderstandingRadiationTopics/RadiationIncidents/JapaneseNuclearIncident/IncidJapanFAQs/ ◆

REMPAN Response to Fukushima

FMBA experts providing support in Japan

By PR services of the Ministry of Health and the FMBA of Russia, – press conference, April 21, 2011

An expert group of the **Federal Medical Biological Agency (FMBA)** of Russia – three medical and three technical experts, among these GD K. Kotenko of the **Burnasyan Federal Medical Biophysical Center (FMBC)** – led by Head V. Uyba provided support to Russian citizens in Japan.

Experts (from left): V. Kransnyuk, FMBC, S. Shinkarev, FMBC, V. Uyba, FMBA, K. Kotenko, FMBC

In a two-week mission the Russian experts provided advice and ensured safety of Russian nationals in Japan, which prevented anxiety and stress. In addition, health care service was provided to Russian and other Commonwealth States nationals in Japan.

According to a press-conference by Mr. V. Uyba, 290 people were examined and more than 200 measurement points were examined. The team collected samples of air, drinking water, as well as some food stuffs from Tokyo's supermarkets. In conclusion, Russian experts confirmed the statements of Japanese authorities on radiation levels in Tokyo and surroundings being below permissible levels.

The experts of Burnasyan FMBC screened 4,536 people and 640 aircrew members returning from Japan at three Moscow airports. The levels of gamma dose-rates were below screening levels for passengers and crew members, as well as their luggage. ◆

Reports of Events

13th Coordination and Planning Meeting of WHO REMPAN, Nagasaki, Japan

By Zhanat Carr, WHO, Geneva, Switzerland and Rita Schneider, Clinic of Nuclear Medicine, Würzburg, Germany

The 13th Coordination and Planning Meeting of the WHO REMPAN held from 16 to 18 February 2011 in Nagasaki, Japan, was hosted by the WHO REMPAN Collaborating Center at the **Atomic Bomb Disease Institute**, Nagasaki University Graduate School of Biomedical Sciences.

More than 50 participants from 18 countries – Australia, Brazil, Canada, China, Egypt, Finland, France, Germany, the Netherlands, Norway, Peru, Russia, Spain, South Korea, UK, Ukraine, and USA as well as representatives form WHO, Switzerland and IAEA, Austria, respectively – attended the meeting.

Participants – 13th WHO REMPAN Meeting, Nagasaki, Japan, February 2011

The scope of the three-day meeting covered various aspects of the response to radiation emergencies and the management of their health consequences. Topics presented in ten sessions ranged from an overview on the structure, capacities, and policy of REMPAN, the introduction of new REMPAN members, latest developments, new technology, recent publications, and new projects, e.g. the EU Multibiodose project, to the public health response in radionuclear emergencies and the recovery period. Sessions highlighted the important issues of harmonization of treatment protocols for the acute radiation syndrome, the experiences made in France, Japan and Russia with mesenchymal stem-cell therapy and the Japanese Atomic Bomb Survivors studies. Finally, a scenario-based interactive radiation accident exercise was conducted and discussed in the panel.

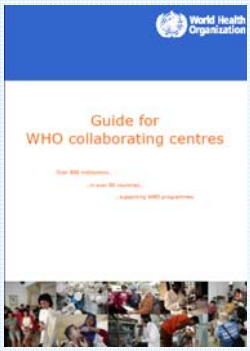
The **policy paper "A Framework for WHO REMPAN"** was presented to the audience for review and a panel discussion on research in radiation emergency medical countermeasures aimed to identify gaps for a **REMPAN research agenda** such as scientific collaboration projects among REMPAN members, further areas of harmonization and standardization in medical radiation emergency management.

The proceedings of this 13th meeting will be published in the Journal of Radiation Protection and Dosimetry.

The 14th Coordination and Planning Meeting of the WHO REMPAN will be held in Würzburg, Germany in 2014. ◆

New Publications

The **"Guide for WHO collaborating centres"** issued in 2010 is intended to provide WHO CCs with a better understanding of the framework of this special relationship with WHO.



For further information, please visit: http://www.who.int/collaboratingcentres/information ◆

The UNSCEAR 2010 Report **"Summary of low-dose radiation effects on health"**, published in 2011, comprises the main text of the report to the General Assembly (A/65/46); available at:

http://www.unscear.org/docs/reports/2010/UNSCEAR_2010_Report_M.pdf ◆

In 2008, at its 56th session, UNSCEAR approved the document **"Health effects due to radiation from the Chernobyl accident"**, as Scientific Annex D – published in 2011 – to its Report to the General Assembly. The findings are based on more than two decades of experimental and analytical studies of the radiation consequences of the Chernobyl accident for health of the exposed populations and for the environment: http://www.unscear.org/docs/reports/2008/11-80076_Report_2008_Annex_D.pdf ◆

Reports of Events

19th Nuclear Medical Defence Conference, Munich, Germany

By Viktor Meineke and Kerstin Müller, Bundeswehr Institute of Radiobiology affiliated to the University of Ulm, Munich, Germany

The radiation accident in Fukushima, Japan, was a major topic covered by the 19th Nuclear Medical Defence Conference held May 16 -19, 2011 in Munich. Over 240 participants from 31 nations attended this conference organized by the **Bundeswehr Institute of Radiobiology affiliated to the University of Ulm** indicating its unique character. Noteworthy, it was the first international conference dealing with the Japanese radiation accident.

The reflection of the Japanese radiation accident event, the evaluation of its management and consequences for the German radiation accident management were in the focus of discussion. Moreover, radioecological aspects of the Japanese radiation accident, modes of action for future radiation accidents as well as national and international management concepts were intensively discussed. Summarizing the panel discussion, international networking particularly in the civilian-military field was recognized as a mandatory prerequisite to successfully cope with potential future radiation accidents.

Colonel Prof. Dr. V. Meineke, Chair – Munich, Germany, May 2011

In addition to international top-class speakers, scientists of the host's institute and cooperation partners presented their numerous research projects. The latest developments and findings in medical radiation protection, radiobiology and radiation medicine were key topics attracting an even larger audience than in the years before.

The 19th Nuclear Medical Defence Conference was accompanied by a special industrial exhibition organized by the German Society of Military Medicine and Pharmacy.

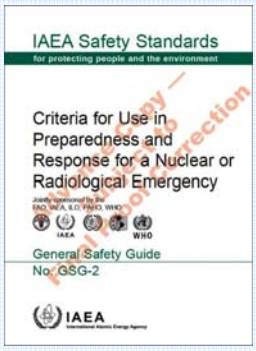
Industrial exhibition – Field preparedness – Munich, Germany, May 2011

Abstracts of the conference are available at: http://www.mci-forum.com/media/issue/37/mcif_abstract_sonderheft.pdf

The 20th Nuclear Medical Defence Conference will be held in Munich in spring 2013. ◆

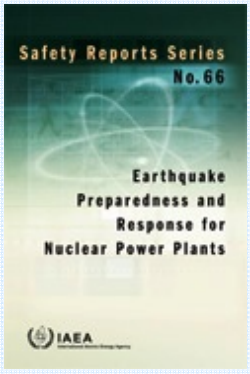
New Publications

The 2011 IAEA General Safety Guide **"Criteria for use in preparedness and response for a nuclear or radiological emergency"** presents a set of generic criteria that form a basis for operational levels needed for decision making in emergency response. Available at:



http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1467_web.pdf ◆

The IAEA Safety Report Series 66 **"Earthquake preparedness and response for nuclear power plants"**, published in 2011, provides up to date detailed guidance on actions to be taken in preparation for, as well as following, an earthquake at a nuclear power plant.



Available at: http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1473_web.pdf ◆

Network News

Training seminar "Radiation and Health", Gomel, Belarus
By Alexander Rozhko, Research Center for Radiation Medicine and Human Ecology, Gomel, Belarus

The Republican **Research Center for Radiation Medicine and Human Ecology (RCRM)** (http://www.rcrm.by/) was established in 2002 to carry out studies on health consequences of the Chernobyl accident.

This modern facility for 500 visits per day and the 360 in-patient beds hospital provides tertiary medical care in 19 medical fields. The RCRM's clinical-experimental department and its four laboratories conduct research on radiation protection, epidemiology, clinical studies, and molecular genetics. RCRM maintains the national registry of dosimetry and Chernobyl-affected populations and analyses the data for epidemiological research and prognosis.

Republican Research Center for Radiation Medicine and Human Ecology – Gomel, Belarus

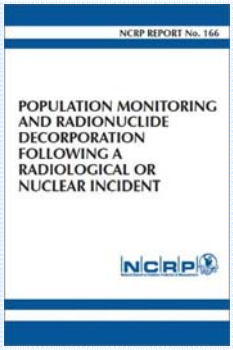
In September 2010, a two-day **WHO training seminar** "Radiation and Health" was organized at the RCRM to provide information for health care workers from areas most severely affected by the Chernobyl accident.

Seminar "Radiation and Health"– Gomel, Belarus, September 2010

The seminar was organized under the framework of the UN Action Plan for the 3rd Decade of Chernobyl and the UN inter-agency project ICRIN (www.chernobyl.info) with participation of UNDP, WHO, IAEA, and UNICEF. The main goal of this project is to alleviate the mental health impact through provision of the evidence-based information about the consequences of the Chernobyl accident on human health and environment for special target groups (health and education workers, academia, decision makers, and media). Conclusions of the UN Chernobyl Forum and UNSCEAR reports on Chernobyl are used as basis for information dissemination. ◆

New Publications

National Council on Radiation Protection and Measurements (NCRP) report **"Population monitoring and radionuclide decorporation following a radiological or nuclear incident"** is the second of two reports that focus on measurement of radionuclides deposited internally in a population exposed in a radiological or nuclear incident. Its focus is on screening a population exposed:



http://www.ncrponline.org/Publications/166press.html ◆

Websites

- **IAEA:** Fukushima update http://www.iaea.org/newscenter/news/tsunamiupdate01.html
- **Japan Ministry of Health, Labour and Welfare:** Japanese earthquake http://www.mhlw.go.jp/english/topics/2011eq/index.html
- **WHO:** Potassium iodide for thyroid blocking http://www.who.int/ionizing_radiation/pub_meet/tech_briefings/potassium_iodide/en/index.html
- **WHO:** Ionizing radiation http://www.who.int/ionizing_radiation/en/index.html
- **WHO:** Food safety in nuclear emergencies http://www.who.int/foodsafety/en/
- **WHO:** FAQ: Japan nuclear concerns http://www.who.int/hac/crises/jpn/faqs/en/index.html
- **WPRO:** Japan earthquake http://www.wpro.who.int/media_centre/jpn_earthquake/main.htm

Upcoming Training Courses

- **09 August, 2011, Oak Ridge, TN, USA**
  Radiation Emergency Medicine (REM)
  http://orise.orau.gov/reacts/capabilities/continuing-medical-education/radiation-emergency-medicine.aspx
- **15-19 August, 2011, Oak Ridge, TN, USA**
  Advanced Radiation Medicine (ARM)
  http://orise.orau.gov/reacts/capabilities/continuing-medical-education/advanced-radiation-medicine.aspx
- **13-14 September, 2011, Oak Ridge, TN, USA**
  Pre-Hospital Radiation Emergency Preparedness (PREP)
  http://orise.orau.gov/reacts/capabilities/continuing-medical-education/pre-hospital-radiation-emergency-preparedness.aspx
- **19 September, 2011-14 February, 2012**
  International Health Regulations implementation course (IHR i-course) - On-the-job training
  http://www.who.int/ihr/training/ihrcourse/en/index.html
- **26 September - 07 October 2011, Hammamet, Tunisia**
  Public Health Pre-Deployment Course (PHPD)
  http://www.who.int/hac/techguidance/training/predeployment/phpd/en/index.html
- **17-21 November 2011, Mol, Belgium**
  Course on Preparedness and Response for Nuclear or Radiological Emergencies
  http://www.sckcen.be/en/Events/TCMOL2011/(page)/36554
- **05-09 December, 2011, Chilton, UK**
  Radiation Emergencies: Planning and Response
  http://www.hpa-radiationservices.org.uk/rpts/courses/

Upcoming Events

- **15-19 August, 2011, Boston, MA, USA**
  Radiological Emergency Planning: Terrorism, Security, and Communication
  https://ccpe.sph.harvard.edu/programs.cfm?CSID=REP0000&pg=cluster&CLID=1
- **22-25 August 2011, Reykjavík, Iceland**
  Nordic Society for Radiation Protection (NSCP) Conference „Current Challenges in Radiation Protection“
  http://www.yourhost.is/nsfs-2011/home.html
- **28 August - 1 September, 2011, Warsaw, Poland**
  14th International Congress of Radiation Research (ICRR 2011)
  http://icrr2011.org/strony/general-information-107
- **27-29 September, 2011, Miami, FL, USA**
  5th International REAC/TS Symposium: The Medical Basis for Radiation Accident Preparedness
  http://orise.orau.gov/reacts/sympsium
- **24-26 October, 2011, North Bethesda, MD, USA**
  Symposium on the International System of Radiological Protection
  http://www.icrp.org

Disclosure

The REMPAN e-NEWSLETTER is produced 2 times a year and circulated by WHO Secretariat to the network members to provide information about latest news on the network's activities, developments in radiation emergency preparedness and management.

The REMPAN e-NEWSLETTER was prepared by the WHO Collaborating Centre for Radiation Emergency Medical Preparedness and Assistance, Würzburg, Germany and the REMPAN Secretariat, WHO, Geneva, Switzerland.

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