



General Assembly

Distr.: General
10 September 2012

English only

Human Rights Council

Twenty-first session

Agenda 3

**Promotion and protection of all human rights, civil,
political, economic, social and cultural rights,
including the right to development**

**Joint written statement* submitted by the Indian Movement
“Tupaj Amaru”, the United Towns Agency for the North-
South Cooperation, the Union of Arab Jurists, the General
Arab Women Federation (GAWF), Organisation pour la
Communication en Afrique et de Promotion de la
Coopération Economique Internationale - OCAPROCE, non-
governmental organizations in special consultative status,
International Educational Development, Inc. (IED), non-
governmental organization on the roster**

The Secretary-General has received the following written statement which is circulated in accordance with Economic and Social Council resolution 1996/31.

[27 August 2012]

* This written statement is issued, unedited, in the language(s) received from the submitting non-governmental organization(s).

The current radiation risk model and its affects on human rights**

We thank the Special Rapporteur for his Report on Hazardous Substances and Waste, and his report and recommendations on his Mission to the Marshall Islands and the United States. In his reports reference is made to scientific controversies concerning methods for determining the health effects of radiation exposure. Here we provide further detail on this issue. Our comment and recommendations are also relevant to the historic and on-going exposures of a large proportion of the human race living in contaminated areas.

I. Principal Facts

There are emerging issues relating to the safety of ionizing radiation exposure safety norms. This is of critical importance in the retrospective evaluation of the radioactive exposures of the inhabitants of the Marshall Islands. More serious is the historic and on-going human exposures in areas contaminated from releases from nuclear sites, from accidents and from exposures to Uranium through mining, processing and from weapons. Historically, exposure to ionizing radiation has been assessed through a risk model associated with the International Commission on Radiological Protection (ICRP). The generic methodology was developed in the 1950s and despite significant new discoveries in the area, has not been adequately reviewed and is now clearly unsafe. A current Petition to the European Parliament, supported by a large number of scientific experts, refers to evidence of this and requires the Parliament to ask the Commission to order a re-Justification of all practices involving radiation exposures.¹

Regarding the effects of US atomic tests in the Marshall Islands, discussions presented in Document A/66/378 are invalidated by this issue of the failure of the ICRP Radiation Risk Model. The problem is that UNSCEAR, in considering UN resolution 65/96 Para 14 specifically applied and cited this risk model of the ICRP as the basis of its response. Thus the discourse was framed in terms of the concept of radiation “absorbed dose”. However, it has been clear for at least 20 years and particularly since Chernobyl, that “absorbed dose”, the basis of the model, cannot be safely employed for assessing the health effects of internal exposures of the type received in the Marshall Islands. The reason is that internal radiation exposure results from the decay of specific radionuclides with chemical properties which make local energy density near critical organelles and structures near the nuclide very high. The averaging process leading to “absorbed dose”, whilst possibly accurate for external exposures, cannot be employed for internal exposures especially to nuclides with chemical affinity for chromosomal (genetic) components. This is accepted by the ICRP in its latest report ICRP 103 and regulators are advised to employ different methodology for these internal exposure situations. Such methodology has been developed by the European Committee on Radiation Risk (ECRR) and the use of the radiation risk model of the ECRR (recently incorporated into Japanese law) leads to accurate prediction of the results of such exposures (ECRR2010 see www.euradcom.org)³. Since UNSCEAR in its reports on the Marshall Islands exposures relies on an incorrect model its views must be set aside together with its supporting documents.

¹ The European Parliament Petition: The issue of Scientific Policy Advice on internal exposures to radioactive pollutants and the legal requirements of the EURATOM Basic Safety Standards Directive (in English and French) can be downloaded from www.nuclearjustice.org.

II. Some failures of ICRP/ UNSCEAR risk models²

1. Childhood cancer near nuclear installations

There is increased risk of childhood leukemia within 5km of nuclear sites in Europe. A list may be found in ECRR2010.³ Child leukemia excesses are found near all the sites examined, and taken together these studies define an error of upwards of 1000-fold.^{4,5}

2. Infant leukemia after Chernobyl

Five different groups reported a significant increase in infant leukemia in Europe and the USA in children who were in the womb at the time of the Chernobyl fallout as measured by whole body monitoring. The Chernobyl exposure to internal radionuclides is the only explanation for the increase. Effects in Greece, Germany, Scotland, Wales, Belarus and USA show the ICRP model to be incorrect by between 400 and 1000-fold.⁶

3. Human sex ratio at birth

Recent research shows statistically significant alterations in the human sex-ratio at birth (the number of boys born to girls) after (a) atmospheric bomb testing, (b) Chernobyl and (c) near nuclear facilities. This supports earlier evidence of increases in infant mortality during the period of atmospheric weapons testing. Sex ratio has been accepted as a measure of genetic damage through preferential killing of one or other sex depending on the mothers or father exposure. According to the authors millions of babies were killed by these effects. The ICRP risk model entirely excludes consideration of such effects.⁷

² A more extensively referenced version of this section is to be found at www.nuclearjustice.org.

³ ECRR 2010 The 2010 Recommendations of the European Committee on Radiation Risk. The health effects of exposure to low doses of ionizing radiation. Eds--Busby C, Bertell R, Schmitz Feuerhake I, Scott Cato M and Yablokov AV, Brussels: ECRR.

⁴ Spix C, Schmiedel S, Kaatsch P, Schulze-Rath R, Blettner M, (2008) Case-control study on childhood cancer in the vicinity of nuclear power plants in Germany 1980-2003. *Eur J Cancer* 44, pp. 275-284.

⁵ Sermage-Faure Claire, Laurier Dominique, Goujon-Bellec Stéphanie, Chartier Michel, Guyot-Goubin, Aurélie, Rudant Jérémie, Hémon Denis, Clavel Jacqueline (2012) Childhood leukemia around French nuclear power plants—The geocap study, 2002–2007 *International Journal of Cancer* Volume 131 (5) E769–E780 DOI: 10.1002/ijc.27425.

⁶ Busby C C, Scott Cato M, (2000) Increases in leukaemia in infants in Wales and Scotland following Chernobyl: evidence for errors in risk estimates *Energy and Environment* 11(2) 127-139; Busby C.C. (2009) Very Low Dose Fetal Exposure to Chernobyl Contamination Resulted in Increases in Infant Leukemia in Europe and Raises Questions about Current Radiation Risk Models, *International Journal of Environmental Research and Public Health*; 6(12):3105-3114. <http://www.mdpi.com/1660-4601/6/12/3105>.

⁷ Scherb H and Voigt K (2010) The human sex odds ratio at birth after the atmospheric bomb tests, Chernobyl, and in the vicinity of nuclear facilities, *Env.Sci.Pollut.Res. Int* 18 (5) 697-707; Sternglass E J, (1971) Environmental Radiation and Human Health, in *Proceedings of the Sixth Berkeley Symposium on Mathematical Statistics and Probability*, ed. J. Neyman (Berkeley, Calif.: University of California Press); Whyte R K, (1992) First Day Neonatal Mortality since 1935: A Re-examination of the Cross Hypothesis, *British Medical Journal*, 304: 343-6; and, Scherb H and Voigt K (2011) in Busby C, Busby J, Rietuma D and de Messieres M Eds. (2011) Fukushima: What to Expect. *Proceedings of the 3rd International Conference of the European Committee on Radiation Risk* May 5/6th Lesvos Greece. Brussels: ECRR; Aberystwyth UK: GreenAudit.

4. Cancer, leukemia/lymphoma and heart disease in Uranium workers

Recent studies show that very low level Uranium inhalation exposure caused increased hazards to French nuclear workers of developing lung cancer, lymphoma/leukaemia and heart disease. The severity of the risk is a function of the type of Uranium. The error in the ICRP model shown is about 2400-fold. This finding supports the discoveries in Iraq and the Balkans of Uranium effects in those exposed to weaponised Uranium.⁸

5. Secondary Photoelectron Effect (SPE)

Interest has recently focused on the ability of high atomic number (Z) elements in the body to act as antennas for natural background gamma radiation. The physical absorption of gamma radiation by elements is proportional to the fourth power of their atomic number Z. Thus nanoparticles of insoluble high Z elements (Gold, Platinum, Uranium) absorb background radiation thousands of times more effectively than living tissue (mainly water) and then release this energy into tissue as local photoelectrons. Experimental measurements with gold foil, gold nanoparticles and computer analyses which examine the dose close to the particles show quite clearly that the effects are those of high enhancement of dose largely predicted by theory. In addition, since Uranium, which has the highest Z of any element also has a strong affinity for DNA, the enhancement of hazard from molecular or ionic Depleted Uranium, shown by a number of studies is explained. The SPE has not been incorporated into ICRP risk modelling and these discoveries (and others relating to Uranium hazards reported since 1996) falsify the ICRP risk model.⁹

6. Cancer and genotoxic effects in Iraq following Depleted Uranium exposure

A series of studies of the population of Fallujah Iraq shown to have been exposed to Uranium have revealed extremely high rates of congenital malformation at birth and cancer and leukemia/lymphoma in adults.¹⁰ These findings, supported by studies of congenital

⁸ Guseva Canu I, Laurier D, Caër-Lorho S, Samson E, Timarche M, Auriol B, Bérard P, Collomb P, Quesned B, Blanchardone E (2010) Characterisation of protracted low-level exposure to uranium in the workplace: A comparison of two approaches, *International Journal of Hygiene and Environmental Health* 213 (2010) 270–277; Guseva Canu, Irina, Garsi, Jerome-Philippe, Caër-Lorho Sylvaine, Jacob Sophie Collomb, Philippe, Acker Alain, Laurier Dominique (2012) Does uranium induce circulatory? First results from a French cohort of uranium workers *Occup. Environ. Med.* OEM Online First, published on March 3, 2012 as 10.1136/oemed-2011-100495; Guseva Canu I, Jacob S Cardis E, Wild P Caër-Lorho S, Auriol B, Garsi JP, Timarche M, Laurier D (2010) Uranium carcinogenicity in humans might depend on the physical and chemical nature of uranium and its isotopic composition: results from pilot epidemiological study of French nuclear workers, *Cancer Causes Control* DOI 10.1007/s10552-011-9833-5.

⁹ Busby C, (2005) Depleted uranium weapons, metal particles and radiation dose. Considerations of radiation exposure in tissue containing small dense particles of chemical elements of high atomic number as a consequence of secondary radiation fields resulting from scattering and photoelectron excitation. *Eur. J. Biol. Bioelectromagn.* 1: 82-93.; Busby C C, (2005) Does uranium contamination amplify natural background radiation dose to the DNA? *European J. Biology and Bioelectromagn.* 1 (2) 120-131.; Busby C, Schnug E (2008) Advanced biochemical and biophysical aspects of uranium contamination. In- LJ de Kok and E Schnug *Loads and fate of fertiliser derived uranium* Leiden: Backhuys.; Tickell O, (2008) How war debris could cause cancer. *New Scientist* 6th September 2008.

¹⁰ Alaani Samira, Tafash Muhammed, Busby Christopher, Hamdan Malak and Blaurock-Busch Eleonore (2011) Uranium and other contaminants in hair from the parents of children with congenital anomalies in Fallujah, *Iraq Conflict and Health* 2011, 5:15 doi:10.1186/1752-1505-5-15; Busby, Chris; Hamdan, Malak; Ariabi, Entesar. (2010) Cancer, Infant Mortality and Birth Sex-Ratio in Fallujah, Iraq 2005–2009. *Int. J. Environ. Res. Public Health* 7, no. 7: 2828-2837. doi:10.3390/ijerph7072828; Alaani S, Al Fallouji M, Busby C and Hamdan M (2012) Pilot study of

malformations in the offspring of US Gulf war veterans and other studies of Iraq and Balkan populations exposed to weaponised Uranium, are predictable from the scientific considerations of Uranium behaviour (see above, SPE).¹¹

7. Chernobyl effects as reported in the Russian peer-reviewed literature

Chernobyl accident exposure effects have been reported in Russian-language peer review literature since 1996. These results have been largely ignored by UNSCEAR and ICRP.¹² They constitute a very large body of work which shows that the effects are extremely serious. They range from cancer and leukemia to heart disease together with premature ageing. They include congenital transgenerational diseases and are reported in animals and plants which cannot be affected by psychological processes (radiophobia). There are also objective measurements of serious biological harm. The germline mutations found by minisatellite DNA tests in humans were also associated with real morphological effects and fitness loss in birds and were shown to have caused significant sex ratio changes in the birds and also population loss, supporting the effects reported for humans.¹³ The implications for the understanding of the historic effects of the nuclear project on human health, including the Marshall Islands exposures, are alarming.

8. The Japanese pale grass blue butterfly¹⁴

A new paper shows major contamination-related genetic and genomic damage to a Japanese butterfly in the Fukushima contaminated areas at doses which the ICRP would consider trivial.

III. Conclusions

UN Resolution 45/94: “Recognises that all individuals are entitled to live in an environment adequate for their health and well-being and calls upon member states and intergovernmental and nongovernmental organizations to enhance their efforts towards a better and healthier environment.” In view of the clear and accepted connection between Human Rights and Environment, failure of the current radiation risk norms to protect individuals living in radioactively contaminated areas, including the Marshall Islands, is an

congenital rates at birth in Fallujah, Iraq, 2010 *J. Islam. Med. Assoc. N. Amer*, Accepted for publication May 2012.

- ¹¹ Busby C (2009) Uranium Weapons—Why all the fuss? United Nations Disarmament Forum Vol 3 25-66 Geneva: UNIDIR www.unidir.ch/pdf/articles/pdf-art2758.pdf.
- ¹² Busby C, Yablokov A V (2006, 2009) *ECRR 2006. Chernobyl 20 years On. The health Effects of the Chernobyl Accident* Aberystwyth: Green Audit; Yablokov A V, Nesterenko V B, Nesterenko A V, (2009) Chernobyl: Consequences of the Catastrophe for people and the environment, Annals of the New York Academy of Sciences. Vol 1181 Massachusetts USA: Blackwell; Busby C, Busby J, Rietuma D and de Messieres M Eds. (2011) Fukushima: What to Expect. Proceedings of the 3rd International Conference of the European Committee on Radiation Risk May 5/6th Lesvos Greece. Brussels: ECRR; Aberystwyth UK: GreenAudit.
- ¹³ Dubrova Y E, Nesterov V N, Jeffreys A J et al., (1997) Further evidence for elevated human minisatellite mutation rate in Belarus eight years after the Chernobyl accident, *Mutation Research* 381 267-278; Ellegren H, Lindgren G, Primmer C R, Moeller A P, (1997), Fitness loss and Germline mutations in Barn Swallows breeding in Chernobyl, *Nature* 389/9, 583-4; Møller AP, Bonisoli-Alquati A, Rudolfson G, Mousseau TA (2012) Elevated Mortality among Birds in Chernobyl as Judged from Skewed Age and Sex Ratios. *PLoS ONE* 7(4): e35223. doi:10.1371/journal.pone.0035223.
- ¹⁴ Hiyama Atsuki, Nohara Chiyo, Kinjo Seira, Taira Wataru, Gima Shinichi, Tanahara Akira, Otaki Joji M. The biological impacts of the Fukushima nuclear accident on the pale grass blue butterfly *Nature SCIENTIFIC REPORTS* | 2 : 570 | DOI: 10.1038/srep00570.

issue of paramount importance. We call for an immediate independent and transparent re-evaluation of the ICRP radiation risk model which takes into consideration new and important evidence. For the Marshall Islands, we recommend urgent and remedial action to restore the right to health and meaningful remedy resulting from historical failures to revise scientific methods of assessment of the full spectrum of injuries, including transgenerational effects resulting from the nuclear weapons testing program. There should be an immediate health survey of the Marshallese population with an emphasis on contamination analysis, particularly for Uranium. The evaluation of historic radiation harm must not be discounted on the basis of deductive mathematical modelling based on absorbed dose since this approach is not scientifically valid. US compensation approaches for individuals should be presumptive and consistent with the eligibility requirements of its own atomic veterans, workers, and downwinder compensation programs.

Notes

** NGOs without consultative status, also share the views expressed in this statement: BRussels Tribunal, Arab Lawyers Association- UK, Association of Humanitarian Lawyers (AHL), International Lawyers.org, The International League of Iraqi Academics (ILIA), Geneva International Centre for Justice (GICJ), The Iraqi Commission on Human Rights (ICHR), Women Will Association (WWA), Organization for Widows and Orphans (OWO), Ikraam Center for Human Rights, Belgian Peace Movement, Ligue camerounaise des droits de l'homme, Monitoring Net of Human Rights in Iraq (MHRI), Women Solidarity for an Independent and Unified Iraq, Geneva Global Media Centre, International Coalition against War Criminals (ICAWC), Medical Aid for the Third World, Association of Iraqi Diplomats (AID), The African Association of Human Rights (AAHR), Protection of Human Rights Defenders in the Arab World, General Federation of Iraqi Women (GFIW), The International Action Center (IAC), Association of Iraqi Intellectuals and Academics, The International Network of Arab Human Rights NGOs, Iraq Solidarity Association in Stockholm, Association of Human Rights Defenders in Iraq (AHRDI), The African Center for Human Rights (ACHR), Arab Lawyers Network-UK, Conservative Centre of Environmental & Reserves in Fallujah (CCERF), Studies Centre for Human Rights and Democracy, The Iraqi Centre for Human Rights.
