

## **MEDIA RELEASE**

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An ongoing study on the long-term effects of the Chernobyl disaster brings a new perspective on the consequences:

### **In addition to cancer, the reactor accident also contributed to non-cancer diseases and neuropsychological effects**

At the initiative and with the support of Green Cross Switzerland, a multi-year study was carried out to analyse the long-term effects of the Chernobyl reactor accident on mental and physical health. One of the reasons for this study was that even 28 years after the Chernobyl nuclear accident possible health consequences other than cancer have not been investigated in sufficient depth. Also, the results of the research on the health effects are used as a basis for therapeutic interventions through the Green Cross Social and Medical Care programme to improve the quality of life of the affected population. Taking all exposure combinations into account, the authors of the Chernobyl study have come to the conclusion that a great many people have been affected, as many as 10 million according to the highest estimates.

The current study report brings the reviews of 2011 and 2013 up to date to describe, as completely as possible, the evidence of the effects on the Chernobyl disaster with regard to neuropsychological and physical illnesses. According to the earlier reviews, the extensive findings from the studied literature and the focus groups in Kiev and Bila Tserkva are convergent and clear in terms of the neuropsychological effects. Psychological effects, such as anxiety, depression, suicide, post-traumatic stress disorders (PTSD) and reduced general wellbeing are the major concerns of the Chernobyl survivors today. Aside from the exposure to radiation, the people who live in the disaster area are suffering from various acute and chronic stress factors which have been proven to potentially impact the quality of life and cause emotional disturbances among the survivors. Such stress factors include, for example, direct consequences of the accident with the potential for Post-Traumatic Stress Disorder (PTSD), long-distance relocation as a result of contamination, concerns about future health risks, and even the stigmatization as a group of people afflicted by disaster.

### **Cardiovascular disease and impaired immune system**

The Chernobyl accident was not only responsible for acute radiation sickness, cancer and neuropsychological effects, but likely contributed to the burden of permanent non-cancer illnesses adversely impacting the quality of life and the mortality of the affected people to this day. These long-term effects include cardiovascular disease, impaired immune system and other blood disorders as well as congenital deformities. Some findings of representative studies follow. Blood analyses of children in highly contaminated areas showed an elevated ratio of "null" lymphocytes. In addition, a statistically relevant difference in the number of the CD4<sup>+</sup>, CD8<sup>+</sup> and CD16<sup>+</sup> lymphocyte subpopulations and in the neutrophil phagocytic activity level was found in the Latvian clean-up workers in Chernobyl compared to the Latvian control group, which also indicates an alteration of the specific immune response.

Pregnancy results from 755,297 women, recorded between 1982 and 1990 in two highly contaminated regions (Gomel and Mogilev) and in two less contaminated areas (Brest and Vitebsk) in Belarus, showed higher rates of congenital deformations in the highly contaminated regions. Furthermore, the foetal mortality rate in Gomel (Belarus) increased by eight percent after the nuclear accident.

Another study collected data between 1991 and 1992 and examined Russian immigrants to Israel. Researchers classified the study subjects according to three groups: Chernobyl clean-up workers and immigrants with greater or lesser exposure. Findings showed a statistically relevant difference in the prevalence of cardiovascular disease between the clean-up workers and other immigrants less affected by exposure.

In summary, more than 25 years after the Chernobyl disaster the people from the affected countries, regardless of whether or not they were relocated at that time, continue to suffer from persistent neuropsychological effects and physical illnesses, which call for greater attention from public health and medicine.

### **Thyroid cancer in children is not fully explained**

The Chernobyl nuclear disaster began on 26 April 1986 when the reactor in block 4 failed during a scheduled system test. An area now comprising Belarus, Ukraine, Moldavia and Russia was contaminated by radioactive substances released because of the accident. After the disaster the questions of the health consequences for the population of the affected regions and the potential risk of the agricultural use of contaminated land arose. Immediately following the accident the dangers related to radiation exposure were most important: acute radiation syndrome at first and later cancer. Studies on the radiation doses were carried out, which established acute radiation health effects in the directly exposed victims, cases of leukaemia in children and clean-up workers, as well as premenopausal breast cancer. Thyroid cancer in children, which occurred epidemically after the Chernobyl accident, had not been expected to such an extent and still cannot be fully explained to this day.

### **More research is needed**

Research results on the situation of the population of Moldavia meeting the inclusion criteria of the study are not available so far. Further long-term investigation of the various Chernobyl-affected populations is needed. In the aftermath of the Fukushima accident of 2011, such studies are further needed to have results to help the survivors of Chernobyl and prepare them for the longer-term effects, which will also be a concern for the more recent victims of the nuclear accident in Fukushima.

### **Methodology**

The Green Cross study is conducted by Professor Jonathan M. Samet, founding Director of the USC Institute for Global Health and Chair of the Department of Preventive Medicine at the Keck School of Medicine of the University of Southern California (USC), in cooperation with the local partners of Green Cross in Belarus, Russia, Moldavia and Ukraine.

The study is predominantly comprised of cross-sectional analyses combined with a number of long-term studies. In a first step, 50 publications were examined, the results of which relating to anxiety, depression, posttraumatic stress disorders (PTSD), wellbeing and cognition were factored in. Out of more than 800 studies involving the Chernobyl disaster and various health effects 34 were selected for further examination. Another 1,500 new publications were reviewed so as to extensively document the progress in the literature and the current findings in connection with neuropsychological effects and non-cancer diseases related to the accident in Chernobyl.

Approximately 10 million people in the Chernobyl region are suffering from life-long effects of radioactive contamination. The permanent exposure to low level radiation entering the body on a daily basis through food intake carries particular weight. Green Cross Switzerland is committed to conquering the long-term effects of industrial and military disasters and the pollution from the period of the Cold War through its international programmes "Social and Medical Care" and "Legacy of the Cold War". Top priorities are the improvement of the

quality of life of people impacted by chemical, radioactive and other kinds of contamination and the promotion of sustainable advancements in the spirit of cooperation instead of confrontation. The goals of the Zewo-certified environmental organisation are supported by the Green Cross parliamentary group consisting of 25 members of the Council of States and 82 members of the Swiss National Council working across party lines.

Green Cross International (GCI), established by Mikhail Gorbachev, is an independent, non-profit non-governmental organisation acting through advocacy at the highest level and through local projects to overcome the interrelated global challenges of security, the fight against poverty and destruction of the environment. GCI is headquartered in Geneva and maintains a growing network of national organisations in over 30 countries.

*Effective 11 December 2014, the study will be available in English for downloading at <http://www.greencross.ch/de/news-info/tschernobyl.html>.*

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