

## **MEDIA RELEASE**

Zurich, 30.1.2016

Green Cross Information Event at the Swiss Federal Institute of Technology (ETH) on 30.1.2016 regarding the findings from the Fukushima nuclear disaster

### **Nuclear power plants are neither safe, nor clean or cost-effective**

Prof. Dr. R. Richard Ernst, Professor Emeritus ETH Zurich and Nobel Prize winner in chemistry in 1991, under whose patronage the Green Cross information event is held, urgently warns in his opening remarks: "Better to shut down all nuclear power plants today than waiting for tomorrow!"

Naoto Kan, the former Prime Minister of Japan, explains that until the Fukushima disaster happened he believed that nuclear energy was an advanced technology and that it just needed to be handled carefully. Nevertheless, a serious nuclear accident did occur in Fukushima and more than 200,000 people had to be evacuated. If the magnitude of the accident had been just a bit greater, Japan would have plunged into chaos for twenty to thirty years. "The accident has fundamentally changed my views. I consider nuclear power to be the most dangerous form of generating energy and the risk is too great to continue using this technology", Kan says. According to him, the nuclear lobby's claim that nuclear power was cheaper than oil, for example, or natural gas is obviously false. If we add the compensation paid in the event of an accident or the cost of permanent disposal, it is more expensive than oil or natural gas. If the magnitude of the accident had been just a little greater, people within 250 km would have had to be evacuated long-term. It would have affected the Tokyo region and thus 50 million people. Such colossal damage normally only occurs after a devastating wartime defeat. "This knowledge should lead to the discontinuation of nuclear power, because it is neither cost-effective, nor clean or safe", emphasises Naoto Kan at the Green Cross information event.

#### *Hotspots of up to 26 millisievert were measured outside of Fukushima's restricted area*

At the initiative of Green Cross, the radioactivity was measured in the Japanese Fukushima Prefecture and the results were presented by nuclear physicist Dr. Stephan Robinson, Unit Manager (Water/Legacy) of Green Cross Switzerland. According to Robinson, the highest radiation value of 4.01 microsievert per hour was measured in the deserted city of Tomioka in the Fukushima Prefecture. This represents an annual dose of 35 millisievert or 35 times the international limit for the general population. "But the dose rates measured outside of the restricted area of up to 20 millisievert per year, in the municipal park of Koriyama in the Fukushima Prefecture, and of 3 microsievert per hour in a street in Koriyama, which amounts to an annual dose of 26 millisievert, are also high", explains Robinson. "The analysis of the soil samples shows, especially in alpha and beta emitters, that they hugely exceed the limits, which means there is a particularly significant internal radiation hazard", says Robinson. Koriyama belongs to one of two radioactive contamination zones, extending 225 kilometres from the damaged Fukushima nuclear power plant to the south, in the direction of Tokyo, and southwest. The limits in Koriyama of radium-226, thorium-232, caesium-137, and strontium-90 have been exceeded by a multiple. These contaminated, radioactive hotspots are as haphazardly distributed as spots on a leopard's fur.

#### *Japan is called upon to expand the evacuation order to the contamination zones*

A return to the regions outside of the restricted areas is also associated with risks – local products are endangered by radioactive substances, which are very long-lived and distributed unevenly in many hotspots – and agricultural products can hardly be sold or eaten. According to the current directives of the Japanese government, compensation to Fukushima refugees can only be paid if they were evacuated. At this time, this applies to the restricted areas defined in 2011, but not to other obviously polluted areas such as Koriyama,

where two of the samples were taken. However, Japan is planning to cancel the evacuation order for several contaminated restricted areas in early 2018 with the result that the compensation payments to 50,000 people will be eliminated. Green Cross Switzerland and Green Cross Japan do not consider the cancellation of the evacuation order for contaminated zones to be justified. In addition, the evacuation order and the related compensation payments should be broadened to include families with children living in the two contamination zones outside of the restricted areas.

*Hypothetical assumptions were incorrect*

According to Prof. Dr. Vladimir M. Kusnetsow, Academician at the Russian Academy of Natural Sciences, 437 nuclear reactors with a total capacity of 372.6 GW (electric) were in operation in all nuclear power plants worldwide in early December of 2015. Added to this are 143 energy blocks that have been taken out of service or are currently not in operation. The total operating experience of nuclear reactors since the start-up of the first nuclear power plant in Obninsk in 1954 is 15,200 reactor years. The assessments of the possible consequences of damage in nuclear power plants assumed that the probability of significant radiation damage with the meltdown of the reactor's active zone and considerable amounts of radioactive substances escaping from the energy block is no more than once per every 20,000 reactor years. A radioactive disaster involving an energy block in a nuclear power plant was estimated to result in an economic damage of 1 billion dollars with a probability of occurring no more than once in 1 million reactor years. Within less than 60 years, however, and a total operating time of the nuclear energy blocks of just over 15,000 reactors years, disasters involving the meltdown of the active zone of the nuclear reactors occurred in the USA (accident in the nuclear power plant TMI-2, 1979), in the former USSR (accident in the nuclear power plant Chernobyl, 1986) and in Japan (accident in the nuclear power plant Fukushima-1, 2011). The resulting economic damage is in the hundreds of billions of dollars.

*Probability of further reactor damage is increasing*

The main lesson is that the question "Can a serious, unforeseeable accident occur in a nuclear power plant, especially one with RBMK reactors?" now has to be answered honestly: "Yes, if the requirements regarding the reliability of the equipment, the safety regulations, the selection and qualification of the personnel, the operational discipline, etc. are relaxed, it is possible." "And a serious unforeseeable accident with a modern reactor can heavily damage it and thus lead to the release of radioactive materials, which far exceed the allowable limits for the population and the environment", explains Kusnetsow. "If the operating times are extended and with the current, unresolved imperfection of the RBMK reactor design, which exists from the outset, this probability will increase", he adds.

Thirty years after the nuclear disaster in Chernobyl and 5 years after the reactor accident in Fukushima, there are professionals who still believe meltdowns are hypothetical. A real reactor accident, on the other hand, has tragic and far-reaching consequences for centuries. The economy and society in the affected contaminated regions are facing challenges that are almost insurmountable. Around 42 million people are affected for the rest of their lives by the contamination caused by the nuclear disasters in Chernobyl and Fukushima Daiichi. The permanent low level of radiation, which enters the bodies of the people through the daily food, has a particular impact. Green Cross Switzerland is committed to the worldwide withdrawal from nuclear energy and is addressing the effects of the military use of nuclear materials on health and on the environment.

*For further information, please contact Nathalie Gysi, Executive Director Green Cross Switzerland, Tel. +41 (0)43 499 13 10 or +41 (0)79 620 18 14.*