



WG2 MEETING

Feedback from participation at the FAIRDO
meeting, July, 2012

**RESEARCH
INSTITUTE OF RADIOLOGY**

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Outline

- Decontamination
- Quality of measurements
- Challenges in communication from the Chernobyl experience



Decontamination in Belarus

Object of Decontamination	INTERVENTION LEVELS	
	Gamma Radiation, $\mu\text{R/h}$, or Beta Radiation, $\text{particle}/\text{min}\cdot\text{cm}^2$	Action
Territories of pre-school facilities, schools and private houses	35-40 $\mu\text{R/h}$	Removal of 25-cm soil layer
Working office and operational places: -permanent being -temporary being	50 $\mu\text{R/h}$ 100 $\mu\text{R/h}$	Cleaning with detergents and water
Open areas within settlements (stores, public places)	60 $\mu\text{R/h}$	Removal of 25-cm soil layer
Inner surfaces of houses; transportation means	20 $\text{particle}/\text{min}\cdot\text{cm}^2$	Cleaning with detergents and water
Roofs of buildings	40 $\text{particle}/\text{min}\cdot\text{cm}^2$	Cleaning with detergents and water



Decontamination

500 settlements of Belarus were decontaminated during 1986-1989 period, 60% – in 2-3 stages.

- removal of contaminated soil and "clean" refilling;
- dismantling of objects not subjected to decontamination;
- asphaltting of streets, roads and pavements;
- roof replacement;
- waste disposal.

7.3 million m³ of soil was cut off and replaced with 1.57 million m³ of clean soil.



Decontamination

Decontamination should be **based on dose limits** established for this purpose.

1986 : ambient dose 5-20 mR/h  Evacuation

In the initial period of decontamination in the USSR external radiation dose limits changed over time and depended on the category of personnel involved in the post-accident response actions.

In 1986 a dose limit was established which insured no deterministic effects of exposure. The pre-determined emergency standard was that of 250 mSv. Later it was changed down to 50 mSv, and after that, the life-span dose limit was set at 35 mSv.

Decontamination

In Japan all measures including decontamination, evacuation, temporary resettlement, compensations and others are taken based on the ambient dose measurements. Still, there doesn't seem to be unified standards and coordination of work.

Unspecified standards or/and unawareness of residents leads to confusion, social unrest, and incorrect evaluation of decontamination effectiveness.

The objective of decontamination, its desirable effects should also be precisely defined. What to reduce, *individual radiation doses* or *ambient doses*?

Decontamination

How to assure residents that decontamination efforts are or will be effective?

INDEPENDENT CONTROL

In Chernobyl case, all decontamination actions were done by the civil defence troops, however the control over decontamination and its assessment was a responsibility of specially set up control groups made up of the specialists from the Ministry of Nature and Civil Defence headquarters – independent control groups.

Otherwise, people cast doubt on the situation and have no trust in the measures being taken.

Decontamination

Decontamination of farmlands is what is planned in the affected areas of Japan after the clean-up of hot spots.

Will that be effective?

Will the products correspond to the permissible levels?

If not: There are ways for farmers not to lose their lands and income – grow rice for seeds, grow fruits instead, breed pedigree cattle etc. Specialists should provide consultation services and methodological support to the farmers.

Decontamination

Radioactive waste – an urgent problem to be solved.

In spite of the fact that temporary disposal sites are treated with all the precaution, their visible state and close neighbourhood to the villages have strong psychological effects on people's minds.

The problem of building central storage facilities is still to be solved.

Radiation Control System and Quality of Measurements

Lack of trust in the official results of ambient dose and food measurements.

What to do?

1. Establish a **control and monitoring system**, both the national one and independent, operating both on the national level and primarily in the affected areas:
 - provide reliable information to the public and decision-making authorities
2. Provide **methodological and consultation support**:
 - correct interpretation of measurement results
 - teach farmers how to use their land to grow clean products

Radiation Control System and Quality of Measurements

Lack of trust in the official results of ambient dose and food measurements → **community initiatives** to check official data

Why not ...

1. Create a special **radiological centre** in each affected city with all the needed instrumentation to provide food and whole body measurements, consultations or training and practical services to the citizens **free of charge** ?
2. **Individual monitoring devices** to be worn by a specially created group of people (members of community, representatives of different groups of population) ?

Communication and Trust. Some Facts from the Chernobyl Experience

Chernobyl and Fukushima → similar trust build-up problems

By the end of 1986, a special plan of actions was developed for **extension of radiological knowledge** primarily in the farm sector:

- lectures and meetings of scientists with stakeholders in contaminated areas;
- radio and television broadcasts;
- popular science editions;
- film production;
- distribution of posters and radiology-related printed handouts.

Communication and Trust. Some Facts from the Chernobyl Experience

Nevertheless, the process of trust build-up was neither easy nor fast.

Informative meetings were held in the first post-accident years with common people, governors, medical and agriculture professionals, **but** people's understanding of the situation was really inadequate.

Additional fuel to the flame of distrust was regularly added by mass media.

This all could not but evoked confusion among people and their discontent with the actions undertaken by government and scientists.

Communication and Trust.

Some Facts from the Chernobyl Experience

5 years after the Chernobyl disaster low level of awareness boiled over into public protests and rallies held in administrative centers of Belarus. Even a strike committee was created.

This all happened in the USSR regardless of a huge pile of regulatory documents developed within several months after the accident (**unlike in Japan**) on emergency response, post-accident management, radiation protection and safety, and with all the response levels and standards specified.

Communication and Trust.

Some Facts from the Chernobyl Experience

The post-accident regulations came into force immediately and actions were undertaken rapidly.

However, no matter how effective the measures were, they could not instill in people the feeling of being safe, nor would they save us from local cases of strikes, public complaints and appeals to the government with requests to explain, why the residents of “clean” territories should consume milk produced in contaminated areas, for example, in Gomel region.

Communication and Trust. Some Facts from the Chernobyl Experience

Solution to raise people's confidence and trust in the response actions done by the government and scientists

International assistance and evaluation of the situation by the international expert groups, including those coordinated by the IAEA.

When international expert groups confirmed the quality of post-accident actions and measures taken by the government and scientists, the people believed that, in fact, everything was under control.

Communication and Trust. Some Facts from the Chernobyl Experience

Communication and information work with population in Belarus wasn't a simple task and it was not fully put into system until 2003, when the **Information Concept on Chernobyl-Related Problems** was adopted and the system of interaction between different authorities and institutions was worked out.

Objective: **Promote** pro-active attitude towards restoration and development of the affected areas, radiological culture, and positive attitude of the citizens of the country to the affected areas.



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Thank you
for your kind attention!