

**CTIF Symposium – 2011
15th September 2011, Bergen, Norway**

**Colonel László BÉRCZI
President of the CTIF National Committee of Hungary**

**Tasks relating to the Red Sludge Disaster
on the 4th of October 2010 in Hungary**

**Dear Ladies and Gentlemen,
Dear Colleagues,**

Let me give you a short summary of the red sludge incident that happened last year in Hungary. My name is László Bérczi, the President of the CTIF National Committee of Hungary. I am the Inspector General for Fire-fighting at the Hungarian Disaster Management.

Andrea Potoczky, the Secretary of CTIF National committee of Hungary will translate my words to you.

Hungary's most severe industrial disaster so far occurred on the 4th of October last year, when the dyke of a cassette of the sludge reservoir breached on the site of the Hungarian Aluminium Production and Trade Private Limited Company (hereinafter MAL).

Consequently, the mixture of approximately one million cubic meters of red sludge and alkaline water inundated, through a creek, the lower parts of the settlements Kolontár, Devecser and Somlóvásárhely. Ten people were killed during and after the sludge flow, nearly 300 persons were hospitalized.

The total number of victims was over 731. Over a thousand hectares of arable land were contaminated. The disaster in Devecser, Kolontár and Somlóvásárhely damaged 369 properties. You can see the exact figures on the slide.

What is red sludge?

In Ajka, at the alumina plant, bauxite is processed according to the so-called Bayer technology: the aluminium content of the bauxite is separated from the other components using sodium hydroxide under highly alkaline conditions. The resulting main product is alumina, from which metallic aluminium is produced by electrolysis. The byproduct of alumina production is red sludge with high iron content and intensive red colour, which contains both fluids and solids, stored in cassettes.

Based on the analysis of the samples taken from different places, the pH value of the material spilled from the reservoir varied between 11 and 14. Thus, based on these measurements, it was unambiguously ascertained that red sludge is to be considered a material hazardous to the environment.

Now about the disaster itself

A police patrol reported first a large amount of water flowing from the direction of Kolontár. The police alarmed the Ajka Professional Fire Brigade at 12:28. The fire duty officer called the dispatcher of the plant, who gave the following information: it is a normal water drainage procedure. Because of several notifications by the population, the duty shift officer alerted the first crews: 2 fire trucks with 9 fire-fighters.

After reconnaissance, the chief fire officer alerted the rest of the personnel, even the ones on leave. Later, all the fire and rescue forces available in the county, that is voluntary fire brigades, fire-fighting associations, special rescuers, joined their efforts to rescue the population in Kolontár, 60 persons and Devecser, over 700 persons.

What was discovered during the first reconnaissance?

Location Number One: the corner of the sludge reservoir cassette

The entire area was covered with a red substance. The soft soil was hardly accessible. The red sludge was flowing in a creek at the height of two meters. It washed away the railway embankment and the roads; therefore all the traffic was immediately stopped.

Location Number Two: Kolontár

Almost the whole village was inundated, children were trapped in the school building and residents were calling for help in their houses. The first and utmost task was to save lives from house to house!

Location Number Three: Devecser

The red sludge inundated the lower parts of the town. The drift was strong, the roads were also inaccessible, and fire-fighters could only intervene on foot. People escaped to higher places, roofs, trees, electricity poles, et cetera. Short circuits developed, several houses caught fire. At the same time with life saving, fire-fighting tasks also became necessary.

In the first phase of the reconnaissance, the fire-fighters had no information on the composition of the red material. They did not know what kind of danger they had to face when they got in contact with the sludge: 17 rescuers, fire-fighters, policemen, soldiers received burn injuries and respiratory damages.

Because the regulated fire-fighting equipment is not suitable to respond to such an incident, the rescuers had to use civilian earthmoving machines, bulldozers.

Onsite Operations Staff

The Hungarian Government declared emergency for the territory of the three counties surrounding the disaster sites on the 6th of October.

To control and direct the elimination of the consequences of the industrial disaster, the Government established an Onsite Operations Staff from the personnel of disaster management.

The mission of the Operations Staff was to coordinate mitigation and the activities of partner organizations; to command and control the civil protection, fire-fighting, police, military forces and volunteers deployed to the incident sites and to provide them with protective equipment and garments.

Other tasks were to ensure the rest and the catering of the response personnel, to receive and register donations and the labour force offered. This meant the coordination of several hundreds of persons and units of equipment daily.

Onsite tasks focused on three main areas:

- cleanup of built-in areas;
- decontamination of outer areas;
- quality damage elimination of living waters.

After the initial protection efforts, long-term measures for rehabilitation and reconstruction became important.

Other tasks of the Operations Staff were to continuously control

- the cleaning of streets, footpaths and other public areas;
- decontamination of forecourts;
- cleanup of backyards and courtyards;
- decontamination of trafficking vehicles;
- the continuous monitoring of living waters and drinking water sources, and the concentration of dust in the air.

The affected areas were closed by the Police; the traffic was regulated through checkpoints. Only residents and response personnel were allowed to enter the settlements. A considerable number of the population fled to their relatives from their damaged properties; however, the municipalities and charitable

organizations provided lodging for the victims, so nobody was left without shelter even temporarily. The injured were looked after by the Ambulance Service or by other medical institutions at the treatment points, clinics and nearby hospitals.

The affected population had to be evacuated and accommodated, in Kolontár 40 people, in Devecser 500 persons.

You can read the exact figures of the response forces and equipment on the slide: Numerous actors participated in the rescue and decontamination operations right from the start. In the region of Kolontár and Devecser for instance on the 6th of October, 84 fire-fighters with 12 vehicles, 4 Emergency Detection Teams (EDT) with 12 persons, 103 police officers with 22 vehicles, 174 military personnel with 39 vehicles, 29 persons with 20 vehicles from the personnel of disaster management and civil protection, 149 civilian persons with 43 machines, National Medical Service (ÁNTSZ, PHMOS) with 5 persons and 2 vehicles, and 50 workers of MAL participated in the elimination of the consequences of the disaster, that is a total of 606 persons with 142 units of equipment. Some two weeks later, on the 20th of October, 1,125 persons with 292 vehicles and machines participated in the relief efforts.

In November, a total of eight and a half thousand persons and almost five thousand units of equipment were working on the incident sites, which, in a daily breakdown, meant the work of 400 to 500 persons with 70 units of equipment in average, and many voluntary helpers.

Now about lessons learnt during evacuation and accommodation of the population

Because of the threat of a new dyke breach, on the 9th of October, evacuation was ordered for the entire population of Kolontár.

A total of five evacuation zones were designated, comprising about 200 residential buildings and one or two streets per zone, that is 25 to 65 residential buildings per zone. The Operations Staff prepared public information materials, in which they called the attention of the population to the rules of conduct, the content of the emergency package, the notification of disabled persons, the rules of self-evacuation, the route of evacuation and furthermore the reception points. Devecser prepared for an evacuation, but no new spill occurred, therefore, the above population protection measures were withdrawn.

Rehabilitation and reconstruction

On the 4th of November the Governmental Coordination Center for Reconstruction (GCCR) was established from the professional disaster management personnel with 44 persons. The GCCR directed the decontamination, rehabilitation and reconstruction tasks. Emergency was terminated and GCCR was disbanded on the 1st of July 2011. Instead of GCCR, the Disaster Management Staff for Reconstruction (DMSR) is right now carrying out the remaining tasks of rehabilitation. The members of DMSR, the affected municipalities, partner and cooperating organizations, that is more than three hundred persons with two hundred units of equipment are performing their work to reconstruct and rehabilitate the region. The DMSR consists of four service teams, which work in weekly and biweekly shifts. The commander of one of these shifts was Major-General János Bleszity.

Construction of residential buildings, concluding contracts

The Government, after creating the legal bases, decided on the mitigation of the victims, concerning both movable and immovable properties, which meant the construction of new houses and replacing movable properties.

The implementation of rehabilitation and reconstruction was organised by the disaster management, which started on the 3rd of December.

The General Contractor carried out the demolition of the damaged buildings, the design and the construction of the new buildings and public works.

The following options were available to the victims: new buildings, purchase of used buildings, reimbursement of the repair costs, or cash.

In the framework of this procedure the victims received:

- 110 new buildings
- 119 used buildings
- 113 reimbursement cases in cash
- 9 reimbursement cases of the repair costs
- 1 exchange of property
- 21 pending issues

A little bit later (in December and in February) the construction of the residential parks began in Kolontár and Devecser, and was finished on the 29th of July this year. See some pictures of them on the next slides.

Memorial park in Devecser

On the first anniversary of the disaster a memorial park will be inaugurated in Devecser, arranged by the disaster management. This eight-hectare park will have 3 exhibition ponds, half hectare each, furthermore, meadows, footpaths, benches, which all will serve as a place of memory and recreation.

Now a Summary will follow

- The tasks were very complex right from the beginning.
- On the first day of the disaster the primary and most important task was to save the lives of persons in direct danger.
- Another important task was to search the buildings from house to house to find the missing people. Beside the above, a few times fire-fighting tasks had to be carried out as well, close to the hazardous materials.
- Later on we shored the damaged buildings or demolished them for safety reasons.
- During the execution of tasks, the entire personnel performed to their maximum. A great challenge was to supervise the safe work of the tired rescuers and to organise their replacement.
- Finally, we may ascertain that both the primary responders and the persons participating in the decontamination and reconstruction operations stood their ground in an exemplary way.
- Nearly 200 persons received immediate medical check.
- Less than 2.5 % of the personnel were injured or had health complaints.
- The personnel involved in the intervention will be medically screened every year to monitor their health status, because of the long-term effects of the red sludge and the flying dust.
- Director General of the Hungarian disaster management appraised and awarded 60 rescuers for their heroic performance during the first moments of the disaster.

Ladies and Gentlemen, thank you very much for your kind attention!

Have you got any questions?