COUNCIL OF THE EUROPEAN UNION

Brussels, 13 October 2010

14910/10

ENV 685
PROCIV 123

NOTE

from:	General Secretariat
to:	Delegations
Subject:	Red sludge spill in western Hungary - Information from the Hungarian delegation

Delegations will find attached a note from the Hungarian delegation on the above topic, to be dealt with under "other business" at the Council (Environment) meeting on 14 October 2010.

Red sludge spill in western Hungary

Information from Hungary

The accident

On 4 October 2010 at 12.30 p.m., on the territory of the Hungarian Aluminium Co. (Magyar Alumínium Zrt.), an alumina production establishment situated southwest of Budapest in the vicinity of the city of Ajka, the western dyke of sludge reservoir No. 10 burst. As a result, some 600.000 – 700.000 m^3 of red mud escaped, flooding the lower parts of the settlements of Kolontár and Devecser through the Torna creek. The heavily polluted water flowed through the Marcal, Rába and Mosoni-Duna rivers, subsequently reaching the Danube river.

The disaster affected 16 settlements over an area 14 kilometres long and 50-1200 metres wide. This area stretches from the northeast corner of the broken dyke to the settlement of Apácatorna, followed by the Torna creek. The total affected area is more than 1000 hectares, which is divided up as follows: 50 hectares of forest, 600 hectares of crop land and 400 hectares of meadows. 47 hectares is part of the NATURA 2000 network and 44 hectares are also subject to nature protection designation.

The bursting of the dam resulted in a wave of highly alkaline water and red sludge which first affected a smaller part (35 houses) of the nearest settlement Kolontár (only 1 km away from the depository) with a very strong current. Subsequently, it reached Devecser (7 km away) with a weakened wave of sludge, which however covered a much bigger area (207 houses) and 14 houses in Somlóvásárhely. The height of the wave was 2.5 m at the outset.

The wave consisted of much-diluted sludge, with the highest concentration of pollutants remaining in the reservoir. The larger part of the red sludge is still in the depository in solid form.

As a consequence of the disaster, eight persons died and 130 individuals (some in a critical condition) are still being treated with burn injuries in various hospitals.

Response by the Hungarian authorities

The Hungarian Government immediately declared a state of emergency in the three affected counties (Győr-Moson-Sopron, Veszprém and Vas).

The rescue forces immediately started rescue operations and introduced further protective measures under the command and control of the Governmental Coordination Committee (GCC), chaired by the Minister for the Interior. The protective measures were aimed at stopping the flow of the red sludge, reinforcing the dyke, and gathering the red sludge and the polluted materials.

The emergency response measures have been implemented with a view to the following objectives:

1. To ensure the protection of the population by the construction of a new dyke in order to divert the flow of another possible sludge wave.
2. To continuously control the pH level of the rivers and to avoid further pollution.
3. To decontaminate the affected area to limit harmful impacts on the environment as far as possible.

As regards the protection of the environment (point 2 above), the main objectives were to keep the highly alkaline pollution within the territory of Hungary, to localise it in the Marcal river and to prevent the pollution from reaching the Danube. To that end, specific emergency water-quality monitoring was immediately launched, and the construction of 7 shallow dams (underwater dykes) was started in different sections of the river in order to slow down the current under the instruction of the water management authorities.

In order to improve water quality, to lower the pH level and elutriate the pollution, different materials, such as calcium nitrate, magnesium nitrate, gypsum and bio-acid were discharged into the Marcal river. The potentially hazardous pollutants have been localised by sedimentation in low-flow areas with the help of the Marcal barrage. The decontamination measures brought success after a few days, further pollution beyond the Marcal River has been avoided and the pollution has been contained in the Marcal river. The decontamination measuring system implemented can be operated continuously, although since 8 October (Friday) there has been no need for acid treatment. The Hungarian authorities will maintain the system in operation until such time as any possible risk of further pollution is eliminated.

The sludge spilled from the reservoir is not radioactive, causing no danger to human life or health at all in that respect. Radiological measurements were also carried out in the following days, but the level of radioactivity has not exceeded normal values. Developments in water quality parameters are continuously monitored.

A chronological account

On 5 and 6 October 2010 the measures initiated on the previous days continued to be taken, namely, the injection of calcium and magnesium nitrate, gypsum and acetic acid with a view to neutralising contaminated waters. A 3-tier dyke system is being constructed by the operator of the plant in order to prevent a further breach in the dyke. Drinking water sources are continuously monitored. Measurements conducted so far have proven that the drinking water reserves are safe and the provision of piped drinking water has remained adequate. A group of scientists from several universities has started activity on the site to assess the situation.

On 7 October 2010 the pH value of the Marcal river decreased due to the intensive neutralisation measures of the previous days, so no water quality problems or harmful effects on the health of human beings in the water of the Danube River are expected. The authorities managed to stop the severe contamination of the Rába and Danube rivers and to save the flora and fauna in the water of the rivers and their surroundings. The neutralisation of the contaminated area was implemented by pouring gypsum from aircraft. Based on the decision of the Hungarian Government, the National Directorate General for Disaster Management (NDGDM) requested international assistance through the early warning system of the European Commission (the Monitoring and Information Centre - MIC) in the form of experts with relevant international experience in order to eliminate environmental damage. The report on the results of the examination of the water of the Danube River and other rivers are sent daily through the 'AEWS' warning system of the International Commission for the Protection of the Danube River.

As a result of the continuous protection and decontamination efforts the situation has been stabilised, but at the same time dyke experts noticed on **9 October** that the state of the northern dyke of the red sludge reservoir had further deteriorated and the commixture of a water-dense sludge threatens with a new wave of contamination. As a precautionary measure, the Hungarian Government ordered the evacuation of the population of Kolontár (800 persons) and the authorities are ready, with the support of the police and military, to start the evacuation of the population of Devecser (5000 persons) at any sign of danger. Eight reception centres have been prepared to accommodate the evacuees in Ajka (8 km from Kolontár), and the voluntary workers of the Crisis Intervention Team are assisting in the psychological and physical treatment of the affected population. During the day the liaison officer of the EU Monitoring and Information Centre (MIC) arrived at the site to inspect the scene of the disaster and to prepare the field assessment activity of the expert group.

Besides guaranteeing the safety of the population, the Hungarian Government immediately took measures to construct an emergency deflector dyke, the length of which will be approximately 600 m and the average height, depending on the relief, totalling between 3 and 6 m. Its base is 36 m and its top is 7 m wide and it practically cuts through the village of Kolontár. The dyke is made mainly of clay, which will be covered with a layer of stones. The entire area under the dyke has been decontaminated, and all parts contaminated with red sludge have been removed. To date there has been no displacement of the wall of the endangered dyke compared to previous instrumental measurements.

The Hungarian authorities are prepared for the management of further possible red sludge contamination; about 22,000 tons of gypsum have been placed in the area and the necessary acetic acid supply is also provided for. The materials used for reducing the pH level (gypsum) and the organic acid (acetic acid) used during the acidic treatment are both environmentally sound. The authorities managed to achieve their main purpose, i.e. to prevent metallic and organic contamination from reaching the Rába, Mosoni-Duna and Danube rivers. The perishing of the fish stock observed in the Danube at Budapest originates from the contaminated section of the Marcal river, from where the fish corpses were carried away by the current. The gathering of the corpses is continuous.

Due to the dry weather of the past few days and the solidification of the red sludge, air pollution control measures have been introduced. Coordination of the monitoring capacities, designing of a common programme to monitor the eight affected settlements, and the installation of measuring devices and instruments are in progress. According to the measurements, the concentration of the dust is far below the medical threshold limit. The National Public Health and Medical Officer Service (ÁNTSZ) will confirm the minimal level of dust protection on the basis of these measurements.

On 11 October 2010 the five members of the MIC expert team from Belgium, Germany, Sweden, France and Austria joined the MIC liaison officer in Hungary. They are experts on dyke and water management, eco-toxicology and discharges from industrial factories, with scientific and international practical experience in the monitoring of the negative environmental impacts of the red sludge, and will make recommendations for the optimal solution for reducing and remedying the damage.

The intervention staff, consisting of approx. 1200 employees of disaster management, police, defence forces, water management, health services and other authorities are working on the site continuously. The evacuated areas are secured by the police.

The Hungarian Government is committed to investigating the accident and to enforcing the "polluter pays" principle.

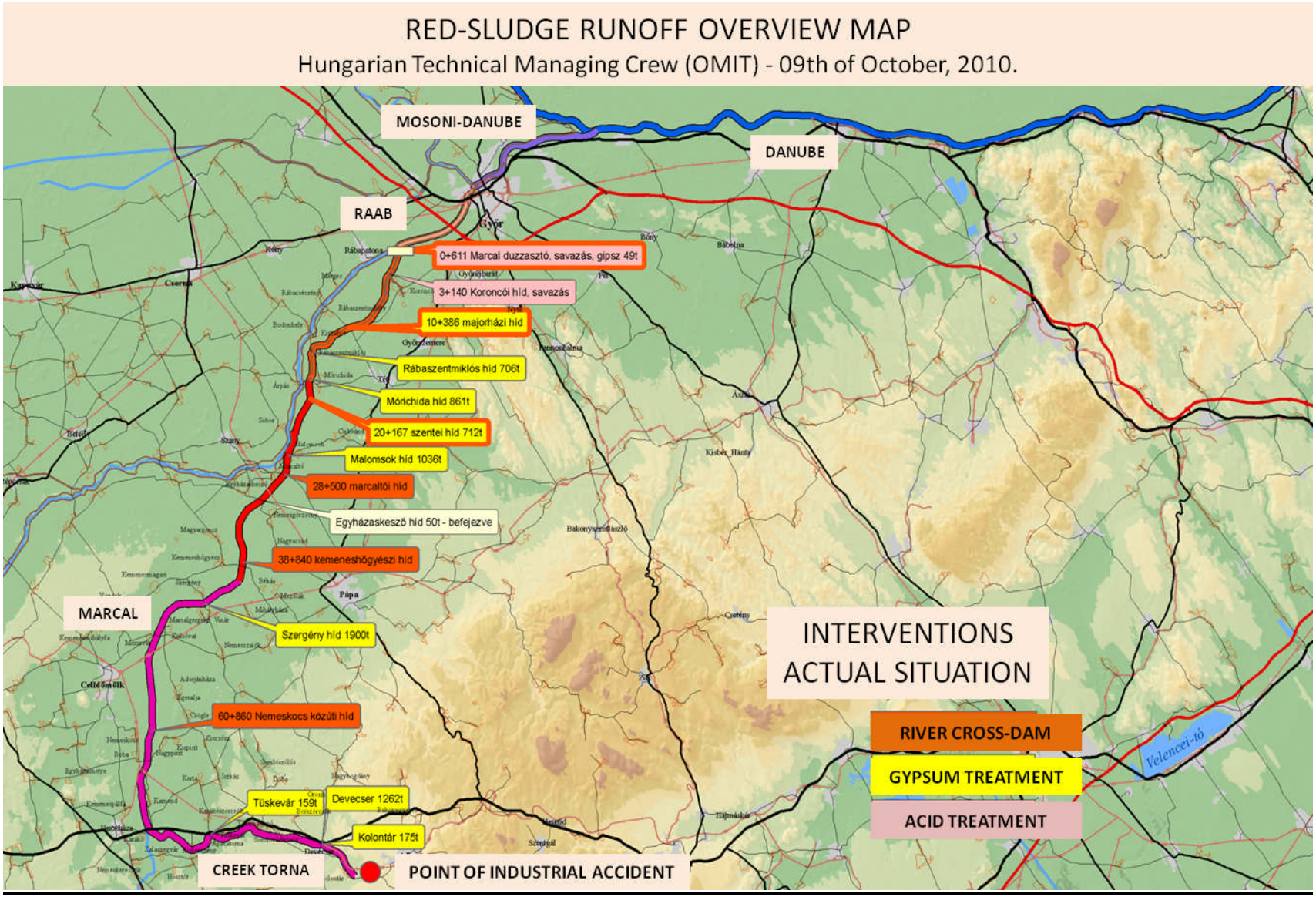
The Government has set up a website in order to inform the population concerned, as well as the domestic and international press, in both the Hungarian and English languages (www.vorosiszap.bm.hu ; www.redsludge.bm.hu).
The Government of Hungary would like to express its gratitude to the European Union and its Member States for their condolences. Moreover, Hungary would like to give thanks for all the offers of technical help and other aid, including offers of finance.

Annexes

Red sludge runoff overview map

Results of the pH and conductivity analysis of surface waters

Dissolved metal concentration in surface waters


RED-SLUDGE RUNOFF OVERVIEW MAP
Hungarian Technical Managing Crew (OMIT) - 09th of October, 2010.
MOSONI-DANUBE
DANUBE
RAAB
0+611 Marcal duzzasztó, savazás, gipsz 49t
3+140 Koroncói híd, savazás
10+386 majorházi híd
Rábaszentmiklós híd 706t
Mórichida híd 861t
20+167 szentei híd 712t
Malomsok híd 1036t
28+500 marcaltöi híd
Egyházaskesző híd 50t - befejezve
38+840 kemeneshögyészi híd
MARCAL
Szergény híd 1900t
60+860 Nemeskocs közúti híd
Tüskevár 159t
Devecser 1262t
Kolontár 175t
CREEK TORNA
POINT OF INDUSTRIAL ACCIDENT
INTERVENTIONS
ACTUAL SITUATION
RIVER CROSS-DAM
GYPSUM TREATMENT
ACID TREATMENT
Velencei-tó

Felszíni víz pH és vezetőképesség mérési adatai
(Results of the pH and conductivity analysis of surface waters)

Dátum *Date*	**Időpont** *Sampling time*	**Vízfolyás** *River*	**Mérés helye** *Sampling site*	**pH**	**Vezetőképesség** *Conductivity* **µS/cm**
2010.10.10	6:40:00	Duna	Gönyü régi kikötő	7,98	563
2010.10.10	8:00:00	Duna	Gönyü régi kikötő	7,54	577
2010.10.10	10:00:00	Duna	Gönyü régi kikötő	7,62	597
2010.10.10	12:00:00	Duna	Gönyü régi kikötő	7,92	588
2010.10.10	14:00:00	Duna	Gönyü régi kikötő	8,14	573
2010.10.10	18:15:00	Duna	Gönyü régi kikötő	8,14	573
2010.10.10	6:00:00	Marcal	Marcal - duzzasztó	8,08	1082
2010.10.10	8:00:00	Marcal	Marcal - duzzasztó	8,19	1092
2010.10.10	10:00:00	Marcal	Marcal - duzzasztó	8,18	1073
2010.10.10	12:00:00	Marcal	Marcal - duzzasztó	8,17	1084
2010.10.10	17:00:00	Marcal	Marcal - duzzasztó	8,26	1017
2010.10.10	21:00:00	Marcal	Marcal - duzzasztó	8,18	931

ANNEX IV

Felszíni víz oldott fémtartalom vizsgálata

(*Dissiolved metal concentration in surface waters)*

Beérkezés dátuma: 2010.10.10

Kód		**10-696/94**	**10-696/92**	
Minta jele		**Marcal a Rábába történő befolyásnál** *Marcal's confluence at the Raba* **.10.10. 14:00**	**Duna Gönyü Sodorvonal** *Danube (middle) at Gönyü* **12:30**	**Ivóvíz határérték 201/2001** *Limit value for drinking water* **Korm. rendelet**
A mintaelőkészítés kezdete/ a vizsgálat vége		**10.10./10.10.**	**10.10./10.10.**	
Ag	µg/l	<0,01	0,02	Nincs határérték/ *no limit value*
As	µg/l	6,58	1	10
B	µg/l	53	31,2	1000
Ba	µg/l	25,5	33,2	Nincs határérték
Cd	µg/l	0,01	0,05	5
Co	µg/l	0,4	0,18	Nincs határérték
Cr	µg/l	1,29	0,65	50
Cu	µg/l	4,28	1,01	2000
Fe	µg/l	435	224	200
Hg	µg/l	0,03	0,02	1
Ni	µg/l	2,8	1,22	20
Pb	µg/l	0,12	0,13	10
Sb	µg/l	0,52	0,47	5
Sn	µg/l	0,05	0,05	Nincs határérték
Se	µg/l	2,58	0,75	10
Zn	µg/l	1,46	0,89	Nincs határérték