

ECOLOGICAL DISASTER IN SOLOTVINO

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Solotvino is situated in Tyachev region of Carpathian Ukraine. Many millions of years ago the Carpathian Sea was here. That is why Solotvino is situated on a huge piece of salt, which stretches for kilometers.

Salt was produced here since the times of the Roman Empire. The first salt mine “Cunegunda” appeared in Solotvino in 1790. In 1908 the mine was flooded. A hollow, filled with water, was formed in mine working place. The lake was named Cunegunda. Later other lakes started to appear near by. Nowadays their amount equals ten: with fresh, salty and iodized water. Lakes water helps to treat locomotor apparatus, fractures, radiculitis, and skin diseases.

A unique allergologist hospital, the biggest in the world, has been going here since 1976. The main treatment mode is speleo-therapy – long-term stay in salt mines with special microclimate. Salt saturated air, bacterium free, does its work – 85% allergic adults and 90-95% allergic children get better. People get rid of rough bouts of asthma.

SALT+WATER=DISASTER

It is bad when water gets into a common mine. But when it gets into salt mine, it is a disaster. Water gradually destroyed 7 out of 8 Solotvino mines. Since old times dozens of pump stations worked round Solotvino, they pumped water out of the ground and poured it to Tisa. But in Soviet times “economically unviable” mines were closed and filled with ground. New times have brought more problems. There were not enough money for water pumping, mine repairs and other needs. Pump stations stopped working. And flood in 1998 struck a crushing blow to the salt mine.

At the beginning of 2000 ground started to collapse in the village. Since 2004 such downfalls have become systematical phenomenon. In 2005 another downfall buried eight cottages and one house. On the 1st of February 2008 one more 30-40 meters diameter karstic hollow was formed. Salt mine and salt factory have not been working for two years, 600 persons lost their job. Two mines, where salt was produced, were flooded by underground water. Solotvino gradually becomes dead village.

76 millions of grivnas are necessary for repair works. It is planned that moisture will be pumped to Tisa. And that is why it is necessary to repair central sewage. Then, probably, lakes will dry.

Nowadays cascades of pump units are used for underground water pumping from mines. In such cases pumps are installed in different levels and pump water from level to another, until water won't reach ground level. Generally drain line pumps are used for such purposes.

Drain line pump helps to pump liquid, i.e. to raise it from depth to surface and drop it to another place. Drain line pump is adopted for water-submerged operation.

Table 1. Drain line pumps characteristics

Model	AP	Drenag 900/180 0	DRW A, DN	TS	TP	TP 40S
Power, kW	0,4- 2,2	1,38-2	0,55- 1,55	10	14	19
Capacity, m ³ /h	33-85	3-8	17-25	18- 60	60	60- 100
Maximum head, m	16-21	10,5-24	20	10- 25	15- 21	40
Maximum size of solid particles (discharge nozzle	12-50	12-24	8	10, 35	44	-

diameter), mm						
Maximum liquid temperature, °C	40-50	50	35, 50	35, 40	35	40
Price, US dollars	310-360	420-760	180-510	345	420-840	1570

Salt lakes can bring profit for Ukraine. There are many investors, who want to develop treatment – and - recreation course in our country. The price of therapeutic mud equals \$5-6 on world market. That is why it is necessary to start looking for investors, who will invest money in salt resort development, and then in a few years they will bring profit in means of taxis. It is evident that it will be easy to do it: it is necessary to monitor salt lakes and determine possibilities of their economic use.

If not absence of control will lead to total destruction of salt lakes: as it will impossible to renew lost opportunity, because saving of these natural resources lasted during centuries.

Local government is sure that it is possible to develop technologies, which allow stopping mine floods, karstic processes and regulating ecological situation in Solotvino, which threaten to become a disaster.

