SURVEY AND ANALYSIS
the content of metals in the sediments obtained after the Black Sea electrolysis and comparing the data with the content of metals in the sea water and those from the sediments of the Black Sea coastal zone to the Bulgarian coast.

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- Getting a huge amount of sludge during the electrolysis process to get Brown's gas, aroused curiosity, to see and understand what we got as a result of this technology. For this purpose, sufficient sludge was obtained in the extraction of Brown’s gas from seawater, some of which were sampled and analyzed in specialized accredited laboratories.

TABLE FOR THE CONCENTRATION OF METALS IN THE CATCHES OF THE BLACK AND EGGES SEAS OBTAINED IN THE PROCESS OF BRAUN GAS

№	Елементи		Размерност	Черно Море
1	2		3	4
1	Алуминий	Al	%	< 0,01
2	Антимон	Sb	mg/kg	123±12
3	Арсен	As	mg/kg	< 3
4	Барий	Ba	mg/kg	< 5
5	Берилий	Be	mg/kg	< 1
6	Бисмут	Bi	mg/kg	57±6
7	Бор	B	mg/kg	< 1
8	Ванадий	V	mg/kg	153±15
9	Волфрам	W	mg/kg	< 20
10	Галий	Ga	mg/kg	20±2
11	Желязо	Fe	%	18,74±0,37
12	Итрий	Y	mg/kg	< 1
13	Кадмий	Cd	mg/kg	< 1
14	Калай	Sn	mg/kg	< 2

15	Калий	K	mg/kg	3549±177
16	Calcium	Ca	%	0,45±0,02
17	Cobalt	Co	mg/kg	259±26
18	Lantanum	La	mg/kg	< 1
19	Lrthium	Li	mg/kg	4±0,4
20	Magnesium	Mg	mg/kg	6864±343
21	Manganese	Mn	mg/kg	1699±85
22	Copper	Cu	mg/kg	982±49
23	Molybdenum	Mo	mg/kg	545±27
24	Sodium	Na	mg/kg	54026±1080
25	Nickel	Ni	mg/kg	25827±516
26	Lead	Pb	mg/kg	8±1
27	Silver	Ag	mg/kg	< 1
28	Strontium	Sr	mg/kg	76±8
29	Thalium	Tl	mg/kg	< 5
30	Tellurium	Te	mg/kg	< 2
31	Titanium	Ti	mg/kg	< 5
32	Phosphorus	P	mg/kg	91±9
33	Chromium	Cr	mg/kg	68198±1363
34	Zinc	Zn	mg/kg	119±12
35	Zirconium	Zr	mg/kg	< 1

- Now, these data obtained from the analysis of these sludge will be compared with the data obtained from the Basin Directorate - Varna, based on the quality of the sea water and the composition of the natural marine sediments at the bottom of the Black Sea. These studies have been carried out by the Basin Directorate - Varna in connection with the state policy on the construction of SOUTH FLOOR on the bottom of the Black Sea and its impact on the ecological environment.

Table 1: : Качество на черноморската вода – до 20 м. (2001)

№	Параметри	Мерна единица	Пролет	Есен
1	2	3	4	5
1	Живак Hg	mg/l	< 0,001	< 0,001
2	Кадмий Cd	mg/l	< 0,001	< 0,001
3	Олово Pb	mg/l	< 0,003	< 0,002
4	Цинк Zn	mg/l	< 0,001	< 0,001
5	Мед Cu	mg/l	< 0,008	0,007
6	Никел Ni	mg/l	< 0,002	< 0,002
7	Манган Mn	mg/l	0,004	0,001
8	Хром Cr	mg/l	< 0,001	< 0,001
9	Желязо Fe	mg/l	< 0,035	0,1
10	Селен Se	µg/l	16	3,5
11	Арсен As	µg/l	9	4
12	Молибден Mo	µg/l	2,9	< 2
13	Петролни въглеводороди	mg/l	0,04	0,8
14	Феноли	mg/l	0,009	0,002

- First of all, the extremely low sodium content is about 5.4%. At the same time the content of sodium salt obtained by evaporation in Pomorie is about 97%.

  Let us now give in tabular form the content of metals the sediments produced as a result of Brown's gas, compared to those in the natural sediments of the seabed formed over millions of years and their content in seawater.

COMPARATIVE TABLE FOR THE CONCENTRATION OF METALS IN THE BLACK SEA AND EGG SEA SEPARATIONS GRANTED ON THE PRODUCTION OF BRAUN GAS, NATURAL SEEDS AND CONTENT IN SEA WATER

№	Elements	Dimensions	Black Sea – Sludges extracted with Brown's Gas	Aegean Sea- Sludges extracted with Brown's Gas	Black Sea natural sediments on seabed	Black Sea water with salinity approximately1,8 %	World ocean with salinity 3,5%
1	2	3	4	5	6	8	9
1	Aluminium Al	%	< 0,01	< 0,01	-	-	0,001 mg/l
2	Antimony Sb	mg/kg	123±12	124±12	-	-	-
3	Arsenic As	mg/kg	< 3	< 3	-	9 µg/l	0,0009 mg/l
4	Barium Ba	mg/kg	< 5	< 5	-	-	0,021 mg/l
5	Beryllium Be	mg/kg	< 1	< 1	-	-	0,0000006 mg/l
6	Bismuth Bi	mg/kg	57±6	33±3	-	-	0,00002 mg/l
7	Bor B	mg/kg	< 1	< 1	-	-	4,450 mg/l
8	Vanadium V	mg/kg	153±15 (0,0153%)	182±18 (0,0182%)	-	-	0,0019 mg/l
9	Tungsten W	mg/kg	< 20	< 20	-	-	0,000001 mg/l
10	Gallium	mg/kg	20±2	22±2	-	-	0,00003

Continued!

11	**Желязо Fe**	**%**	**18,74±0,37**	**11,37±0,23**	**-**	**< 0,035 mg/l**	**0,0066 mg/l**
12	Yttrium Y	mg/kg	< 1	< 1	-		0,000026 mg/l
13	Cadmium Cd	mg/kg	< 1	< 1	-	< 0,001 mg/l	0,00011 mg/l
14	Tin Sn	mg/kg	< 2	< 2	-	-	0,00033 mg/l
15	Potassium K	mg/kg	3549±177	4997±250	-	-	411 mg/l
16	Calcium Ca	%	0,45±0,02	0,73±0,04	-	-	67,3 mg/l
17	Cobalt Co	mg/kg	259±26	170±17	-	-	0,00030 mg/l
18	Lanthanum La	mg/kg	< 1	< 1	-	-	0,0000029 mg/l
19	Lithium Li	mg/kg	4±0,4	8±1	-	-	0,170 mg/l
20	Magnesioa Mg	mg/kg	6864±343	10523±210	-	-	904 mg/l
21	Manganese Mn	mg/kg	1699±85	1167±58	-	0,004 Mg/l	0,0004 mg/l
22	Copper Cu	mg/kg	982±49	611±31	10,93	< 0,008 mg/l	0,0009 mg/l

Molybdenum, sodium, nickel, lead, silver, strontium, thallium, tellurium, titanium, phosphorus, chromium, zinc, zirconium

Continued!

23	**Molybdenum Mo**	mg/kg	545±27	706±36	-	2,9 µg/l	0,01 mg/l
24	Sodium Na	mg/kg	54026±1080	77502±155	-	-	-
25	Nickel Ni	mg/kg	25827±516	16092±322	20,27	< 0,002 mg/l	0,0066 mg/l
26	Lead Pb	mg/kg	8±1	90±9	19,98	< 0,003 mg/l	0,00003 mg/l
27	Silver Ag	mg/kg	< 1	< 1	-	-	0,00011 mg/l
28	Strontium Sr	mg/kg	76±8	131±13	-	-	0,000013 mg/l
29	Thalium Tl	mg/kg	< 5	< 5	-	-	-
30	Tellurium Te	mg/kg	< 2	< 2	-	-	-
31	Titanium Ti	mg/kg	< 5	< 5	-	-	0,001 mg/l
32	Phosphorus P	mg/kg	91±9	102±10	-	-	0,088 mg/l
33	Chromium Cr	mg/kg	68198±1363	67602±13525	15,49	< 0,001 mg/l	0,0002 mg/l
34	Zinc Zn	mg/kg	119±12	115±12	34,93-	< 0,001 mg/l	0,005 mg/l
35	Circonium Zr	mg/kg	< 1	< 1	-	-	0,000015 mg/l

- 1 Typically, V2 05 contains from 0.1 to 0.2% V (1000 to 2000 mg / kg). The vanadium deposits in large industrial quantities are with GABRO associated with Magnesium vanadium titanium magnetite deposits with a total V205 content of 0, n% to 1% (< 1000 mg / kg).
  2 The most important tungsten minerals are: tungsten, seelite, ferbene, honeycomb. The content of tungsten for stand-alone deposits should be above 1%, and for its obtaining from complex deposits - tens of parts per cent.
  3 The main types of gallium ores are: gallium minerals contained in hydrothermal deposits, in lead-zinc deposits, gallium minerals are predominantly sphalerite containing gallium from 0.001% to 0.1%. In alunite deposits the content of gallium is relatively high. Galli is contained in bauxite deposits. In addition, some sedimentary iron ore and mines contained a gallium of about 0.003% to 0.005%.

- From the data shown in the tables it is possible to compare the values of the content of some metals, which gives interest and curiosity.

  For example, the average content of CHROM in the natural sediments of the Black Sea is 15,49 mg / kg or 0,001549%, and the CHROM content of the BRAM gas produced from BLACK SEA water is: 68198 ± 1363 mg / kg or this is 6.198%.

- **Just for BLACK SEA**
  This means that the content of CHROM in the sludge resulting from the extraction of BRAUN GAS is:

  68198: 15,49 = 4402,71 times higher than in natural sediments.
  The content of NICKEL is similar:
  In natural sediments, the average content is 20.27 mg / kg or 0.0027% and in the sludge obtained from BRAUN GAS is: 25827 ± 516 mg / kg, or 2,582%, i.
  25827: 20,27 = 1274,149 times higher than natural sediments

- **About Copper Cu**:
  The natural sediment is: 10.94 mg / kg or 0.00109%
  In the Brown gas sludge: 982 ± 49 mg / kg or 0.0982%
  The ratio is:
  982: 10.94 = 89.76 times higher
  For Zinc Zn:
  The natural sediment is: 34.93 mg / kg or 0.00349%
  In the Brown gas sludge: 119 ± 12 mg / kg or 0.0119%

  The ratio is: 119: 34.93 = 3.4 times higher
  For the rest of the other 35 elements, we have data, but only from the Brown gas sludge. For the remaining 31 elements of the table, there is no published data on the content of metals in natural sediments. But the expectations are to be similar, ie. the content of metals in the Brown gas sludge exceeded those of natural sediments many times.

Conclusions

- Of the many experiments and observations conducted in laboratory conditions, the following is noticed:
  1. The process of bubbling is a flotation of mechanical impurities in seawater.
  2. In the process of separating Brown's gas, atomic hydrogen and oxygen, although one is a strong reducing agent and the other strong oxidizer, act as a catalyst for the process.
  3. Under an electric field associated with a current flow, hydrogen and oxygen extract the metal ions from the water.
  4. The electric field and current flowing down the atomic hydrogen and oxygen are chemically bonded to the metal ions, and they are released as metal compounds in the form of various carbonates, chlorides, sulphides, and so forth. and separated as a bubbling foam.
  5. Separation of different metallic compounds from water is stimulated by bubbling hydrogen and oxygen.
  6. The forced water-electrolyte circulation in the bottom-up direction additionally helps to remove or prevent sticking of the gas bubbles to the electrolytic plates, thereby greatly improving the electroconductivity of the water-electrolyte.

Bibliographic reference

- 1. Protocol № 9738 / 1.06.2015 of EUROTEST - Sofia for analysis on request № 969 / 29.05.2015 with samples - sample № 1 with laboratory № 1510074 taken from the Black Sea in the water area South of Burgas and sample № 2 with laboratory no. 1510075 taken from the Aegean Sea into the aquatory west of Alexandroupolis taken by the authors of the publication.

Since there is no data on the content of metals in natural sediments at the bottom of the Aegean Sea, we can only draw conclusions on the basis of the data obtained from the analysis of sludge obtained from the extraction of Brown gas from water taken from the Aegean Sea, from Alexandroupolis.

- Only from sludge from sea water from the Aegean Sea

  About CHROME
  The content is 67602 ± 13525 mg / kg or 6.7602%

  About NICKEL
  The content is 16092 ± 322 mg / kg or 1.609%

  About COPPER
  The content is: 611 ± 31 mg / kg or 0.0611%
  For ZINC
  The content is: 115 ± 12 mg / kg or 0.0115%

- Now, let's compare the results of the laboratory analyzes of the sludge from the Brown's Gas extraction from the waters taken from the Black and Aegean Seas.
  About CHROME
  Black Sea: 68198 ± 1363 mg / kg
  Aegean Sea: 67602 ± 13525 mg / kg
  The ratio is: 68198: 67602 = 1.0088 times the sludge of the Black Sea is rich
  About NICKEL
  Black Sea: 25827 ± 516 mg / kg or 2.58%
  Aegean Sea: 16092 ± 322 mg / kg or 1.609%
  The ratio is 25827: 16097 = 1.604 times richer the sludge of Black Sea water

- **About Copper**
  Black Sea: 982 ± 49 mg / kg or 0,0982%
  Aegean Sea: 611 ± 31 mg / kg or 0.0611%
  The ratio is: 982: 611 = 1.607 times richer the sludge of Black Sea water
  For ZINC
  Black Sea: 119 ± 12 mg / kg or 0,0119%
  Aegean Sea: 115 ± 12 mg / kg or 0.0115%
  The ratio is: 119: 115 = 1,034 times richer in the Black Sea sludge