SILICOSIS DISEASE HISTORY IN EXPLOITATION OF COAL IN JIU VALLEY

M. FULGA¹, V. ANDREESCU², D. LUPULESCU¹,³

Abstract: Since 1964 there were written papers on the history of mining, in general (Ion Lungu, 1964: “The beginning of coal mining in Transylvania”, Acta Musei Napocensis) and of Valea Jiului mining (Sargetia V, 1968: “The beginnings of the industrial revolution in Valea Jiului mining”), in which the work conditions and the life of the miners were described. Coal was known and extracted in the ancient times. The first coal extraction in Europe was officially mentioned in 1113, at Kerkrade, near the border between Holland and Germany. In 1183 there opened the first mines in Sheffield, England, in 1240 in Durham and in 1291 in Walles. In our country, the first coal mines were discovered in 1771 at Doman, then, in 1788 at Secu and in 1790 at Anina, by Nicolae Hammer. The first mining was mentioned in 1792 at Seierdorf, Anina. The development of mining began at the end of the XVIIIth century and the beginning of the XIXth century. The growing industry of coal mining and the lack of a careful monitoring of the work environment led to an increased risk of pneumoconiosis during the ’50’s, when the pathology of coal dust was not recognized. Since then, the number of miners grew and so the number of diseases induced by dust inhalation.

Key words: coal, silicosis, history of medicine.

Introduction
Jiu valley is the region located in the south of Hunedoara County, at the border among Transylvania, Banat, and Tara Romanesca, region generic called “the country of the black diamond due to the exploitation of the pit coal deposit. This area started to be known since 1782 when layers of coals burning were noticed and those layers burnt much time after this.

Although in Jiu valley there were rich deposits of coal, the interest for natural coal raised considerably just in the 4th decade of the 19-th century, as a consequence of the request of fuel, this request being a result of the development of the capitalism and also due to the extension of the internal and external market.

Historical aspects
The human being has been an energy consumer since the primitive epoch.

The coal has been known and used since antiquity. In 1113 started the first pit coal exploitation from Europe, officially registered in Kerkrade, at the border between Holland and Germany. In 1183 the first coal mining exploitations were also opened and officially registered in England near Sheffield, after this appeared those from Durham, and in 1921 those from Walles. The coal was for a long time the only source of energy, it was used at the beginning as domestic fuel being the only source of heating in houses, after a while the coal started to influence the international economy.

¹ Institute of Public Health Bucharest
² County Public Health Authority Hunedoara
³ University of Medicine and Pharmacy “Carol Davila” Bucharest
The facts are mentioned in the work “The coal research history from ancient times till 1900” written by A Semaka, published in the Mine magazine, 13 in 1962, also in the one written by N. Maghiar – ‘From the history of exploitation and using of mineral coals” published in Mine Magazine nr 21 from 1971.

The 19th century was metaphorical defined the “coal” century. The increasing needs of energy used by the society led to the discovery and exploitation of new energy sources (petrol, natural gases, hydro electric power and atomic power etc.), without eliminating the coal as a source of energy.

Moreover, the coal production increased also in other countries, the coal mining being different regarding their type, structure of the coal layers. The most important coal mining is the pit coal mining these contains coking coal used in chemical industry. The coal mining containing brown coals and lignite are composed of superior coals used as fuel. An inferior type of coal is peat coal; this is frequently used in the North Europe, Asia and North America. The most profitable coal mines are those of surface as they are in Germany. In USA the coal is extracted from coal mines in average of 50% and in C.S.I. (The Independent Community) in average of 35%.

Europe was on the first place regarding the universal production of coal, but the production decreased more than 50% around 1980, nowadays Europe produces just 1/3 from universal production.

C.S.I. is known as one of the greatest coal manufacturer in the world and it has in stored about 2/3 of the universal reserves of coal and from these 90% is located in Asia zone.

In our country the first discoveries of natural coal were made in 1771 in Doman, in 1788 in Secul and in 1790 in Anina by Nicolae Hammer. The first exploitations started in 1792 at Steierdorf-Anina. In our country the development of coal mining started at the end of 18-th century and the beginning of 19-th century. The first works were in 1835 followed by those from 1840 done by Hoffmann brothers and Carol Maderspach, the owners of mines from Rosia Montana. The Maderspach brothers made exploitations in Jiu Valley and they were the ones who put the basis, develop and improved the rudimentary mining coals the likely areas could be Petrosani, Petrila, their work was continued in the 6-th decade of the 19th century.

In 1896 Hoffmann Rafel, made a serial of coal analyses of the coal extracted from Lupeni, he reached the conclusion that this coal belonged to the group of pit coal with long flame and weak agglutinated. He showed the difference between the coal from East part of Jiu Valley and the ones from Lupeni, which contained a higher value in carbon and less in oxygen. The coal was used as raw material, as domestic fuel, later as a development of exploitation industry the coal was used as raw material for energetic industry (hydro and energetic power) metallurgy, iron and steel industry, afterwards was used in chemical industry.

As a consequence of the crisis and because many vacancies were eliminated, after 1990 the coal exploitation industry decreased much being replaced by other sources of energy which are, more profitable, sources like petroleum or natural gases.

About the beginnings and the development of mining in general and especially of Jiu valley was much written beginning with 1964 some works being as follows: ” Ion Lungu, 1964: “The beginning of the development of coal mining in Transilvania”, Acta Musei Napocensis) and “Aspects of the beginning of industrial revolution from Valea Jiului mining (Sargetia V, 1968: In these works was described miners’ work and life conditions from JIU valley and the history of exploitation and the usage of coal from old times – thing reflected in Mircea Baron’s
The work “Custom and continuity in the country – the stone which burns” is a monography of the mining in Jiu Valley, followed by the history of the Jiu Valley with the social and artistic development of the area, the customs and also the evolution of death rate due to the occupational disease as a consequence of the exposure to the coal dust (fig. nr 2).

Furthermore, during 1857-1858 the Uricani, Barbatenii de Sus, Lupeni, Macesd-Paroseni, Jiu Vâldei –Vulcan, Dalja, Petrita were bought by the Anonymous Society of mines and furnaces Brasov, which becomes a huge coal manufacturer of the Hungarian Austrian monarchy. The state made the first acquisition of coal fields in 1865.

Other studies were made by the Blum engineer and were mentioned in 1939 in the study work “Le basin de charbons Petrosani-Jiu Valley. Etude chimico-technic, stade de metamorphose et classification” ans the dr M Marinescu studies on 24 samples of coal from the mines described in the work ‘Piscu, Aninoasa,Petrosani- Est”.

Other pieces of work in which is concluded that Jiu valley has superior coal are the works of the professor Ghe. Macovei- “Course of general geology and stratigraphy” another one is written by Ion E.Bujoiu “Encyclopedia of Romania “written in 1939.

The studies made by Wartha Wincze in 1876 proved that the coal from Petrosani can be used in the manufacture of coke needed in metallurgic industry and also in producing the light gas.

Around 1950 the public opinion sustained the idea that the dust coal from the mines in Jiu Valley doesn’t cause occupational disease of lungs. In the same time was also a wrong idea that the deposit of pit coal dust in the lungs can lead to pulmonary fibrosis which could protect the lungs against the bacillus tuberculosis. The development of mining industry led to the increase of personnel. The lack of means of control against dust the number of people ill because of inhaling coal dust started to rise.

The quantity of dust, in the absence of the means of control, rises in accordance with the quantity of coal extracted.

Statistics from 1968 showed that during the last two decade, in Romania were declared 24000 cases of illness of silicosis. Over 80% were among the personnel of mining industry.
Regarding the existence of pneumoconiosis of ore coal were a lot of debates.

Some considered the coal as an inert gas which is stored in lung and it could cause just a weak fibrosis called black lung disease (anthracosis) which has the opposite effect of the dust from barren gangue that led to silicosis a serious illness, irreversible with lethal end (due to the high level of quartz).

There are different consequences when we talk about the place of work in a coal mine.

The miners from mines of barren gangue exposed to the dust rich in silicon (sillicium) can get ill with classic silicosis and the ones who work in mines of coal will be ill with black lung. Between the two pure types there are also mixed ones, encountered to those who work with stone and coal.

During 1950-1970 the level of dust was of 32, mg/mc air, and the ratio of working places which were exposed to a higher level than the maximum admitted doze was of 63%. During 1982-1996, as a consequence of mechanization and the improvement of the work environment the level of dust decreases at 25 mg/mc.

When we want to establish the risk of getting ill because of dust in a working place we must take into consideration 3 factors: the type of dust, quantity, and the dimension of particles. In each mine the risk is different and it is in accordance with the technology of exploitation used, types of work and the operations done during the cycle of work In the same time the introduction of mechanized working in cutting and evacuate the coal led to an increase of the level of dust in mining mechanized excavations, so it appears “the second wave” of illness and by black lung. For this were taken measures against of the dust and the number of diseases and their frequencies to decrease.

If between 1953-1996 the statistics showed that there were 2420 cases of disease due to inhaling of coal dust in Jiu Valley and the average of life was 42, today the incidence decreased at 1-0,5% and the average of age increased at 50.8 years.

An estimation made before 1975 presented that from 100 ill people 24,9% have worked exclusively in coal extraction (and these were with black lung) 40,8% who worked in combined environment with stone and coal were ill with pneumoconiosis due to mixed dust and 34,3% who worked just in quarry they were ill with silicosis. Regarding the classifying of silicosis grade there can be emphasized the following percents: the first phase -84.4% the second 9,9% and the third 2,8%

Beginning with the setting up of the commission of silicosis in Petrosani and the establishing of the criterion declare the illnesses the silicosis and black lung started to decrease. The level of dust decreased so that the number of cases of silicosis disease is much rarer.

To sum up the morbidity of the personnel which is hired nowadays in mines from Jiu Valle, in comparison with the past? Decrease very much due to the mechanized technology used now in mines.

References: