

# GEOGRAPHIC INFORMATION SYSTEMS IN ANALYSING OCCUPATIONAL DISEASES AND MORBIDITY IN ARAD COUNTY AND ROMANIA

LADINIA ARDEU<sup>1</sup>, DORIN IOSIF BARDAC<sup>2</sup>

<sup>1</sup>PhD candidate "Lucian Blaga" University of Sibiu, <sup>2</sup>"Lucian Blaga" University of Sibiu

**Keywords:** morbidity, evolution, incidence analysis

**Abstract:** Occupational medicine is the medical discipline which studies the work effect on employee's health and also the employee's health effect on the capability of maintaining work at its higher standards. The knowledge of the structure of occupational morbidity has a crucial importance because it represents the effect of occupational exposure to harmful factors in the working environment. Furthermore, when this effect is already known, it may be addressed through different preventive measures. The evolution of occupational diseases in Romania: Although in constant decrease from 2007, 2008 and 2009, in 2010, 1065 new occupational diseases were discovered. The incidence of occupational diseases in 2010 to 100,000 inhabitants in Arad County is 26.13 compared to 22.31 at a national level. In 2011, at a national level, the most common diseases are caused by overtaxing the locomotion system. Secondly, we can find diseases caused by silicosis followed by maladies caused by noise and vibration. Furthermore, bronchial asthma and infections are other important causes that may produce occupational diseases. Analyzing the evolution of these diseases, we can observe a decrease in the incidence of occupational morbidity, which can lead to some crucial explanations: improvement of the working conditions, underreporting the number of the exposed, there are many unreported cases of occupational diseases, failure to attend a regular medical control in order to confirm the exact diagnosis, limited number of occupational medicine doctors in the county.

**Cuvinte cheie:** morbiditate, evoluție, incidență, analiză

**Rezumat:** Medicina muncii reprezintă știința multidisciplinară, care studiază efectul muncii asupra sănătății angajaților, precum și efectul sănătății angajaților asupra aptitudinii de muncă. Cunoașterea structurii morbidității profesionale are o importanță deosebită în condițiile în care acestea reprezintă efectul expunerii profesionale la factori nocivi din mediul de muncă, și care odată precizată, poate fi remediată prin măsuri profilactice. Evoluția cazurilor de boli profesionale în România: în anul 2010 s-au înregistrat un număr de 1065 cazuri noi de boli profesionale, remarcând o ușoară scădere comparativ cu anii anteriori: 2007, 2008, 2009. Incidența bolilor profesionale în anul 2010 la 100000 de locuitori, la nivelul județului Arad este de 26,13, față de 22,31 la nivel național. În anul 2011, la nivel național, bolile profesionale provocate de suprasolicitarea aparatului locomotor au ocupat primul loc în structura pe cauze, urmate de silicoză, apoi pe locul trei bolile provocate de zgomot și vibrații, pe locul patru astmul bronșic profesional, bolile infecțioase ocupând al cincilea loc. Analizând evoluția îmbolnăvirilor profesionale asistăm la o scădere a incidenței morbidității profesionale, fapt care poate avea mai multe explicații, deoarece, după cum cunoaștem, există numeroși "actori" implicați în această problemă: îmbunătățirea condițiilor de muncă, subraportarea numărului de expuși; existența a numeroase cazuri de boli profesionale neraportate, neefectuarea controlului medical periodic la un număr mare de angajați expuși la noxe sau neefectuarea în toate cazurile a investigațiilor medicale de specialitate, care să confirme diagnosticul de boală profesională, numărul redus de specialități de medicina muncii la nivelul județului.

## OCCUPATIONAL MORBIDITY

Occupational medicine is the medical discipline which studies the physiological connection between human body and work, in order to recommend measures which allow the development of professional activities in physiologic and hygienic conditions for maintaining work capacity at its higher standards and preventing occupational and work-related diseases.

In a new concept, Occupational Medicine is a multidisciplinary science, which studies the effect of work on the employee's health, and also the employee's health effect on work abilities.

Health and safety at work represents the product of the individual and group values, of attitudes, competences,

behaviours, habits which determine the engagement, style, and efficiency of health and safety programs regarding work. A good health and safety work culture in a workplace is made by mutual trust, common perception regarding the importance of health and safety at work, but also in trusting the efficiency of preventive measurements.

## THE SITUATION OF OCCUPATIONAL DISEASES IN ARAD COUNTY

Recognizing the occupational morbidity structure has a major relevance, as it represents the consequence of occupational exposure at harmful factors from the work environment, and which once discovered, can be corrected through prophylactic measurements.

<sup>1</sup>Corresponding author: Ladinia Ardeu, Str. Simion Balint, Nr. 10, Arad, România, E-mail: ardeul@yahoo.com, Tel: +40742 015232

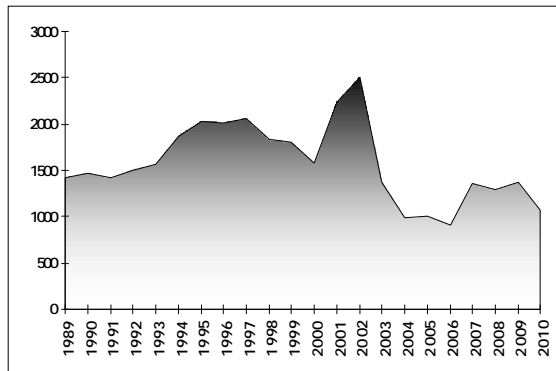
Article received on 20.12.2012 and accepted for publication on 11.02.2013

ACTA MEDICA TRANSILVANICA March 2013;2(1):175-179

Evolution of occupational diseases in Romania:

In 2010, there were registered 1065 new cases of professional diseases, noticing a slowly decrease comparing with previous years: 2007, 2008, 2009, according to figure no. 1.

Figure no. 1. Evolution of occupational diseases between 1989 and 2010



Source: Statistic dates Public Health Bucharest Institute, Conf. Dr. Adriana Todea

The incidence of professional diseases in 2010 on 100000 habitants, in Arad county is of 26,13.

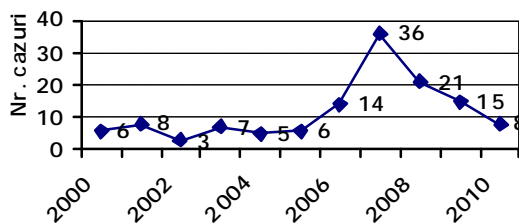
In 2011, at national level, the occupational diseases caused by overtaxing the locomotor system occupied the first place in structural causes, followed by silicoses, on the third place the diseases caused by noise and vibrations, and on the fourth place professional asthma, infectious diseases being on the fifth place.

In Arad county, silicoses, in terms of occupational disease of severe gravity, dominates the table of occupational diseases, but there is a decrease of occurrence of new cases, fact which reveals the restructuration of mining sector: in 2010, there were declared 14 cases and 7 cases in 2011, according to figure no. 2.

There is a higher number of occupational diseases recorded, caused by the exposure at noise, common pathology of European Union, noise being considered as the most widespread emission from modern technology.

At national level, in 2010, occupational diseases caused by silicose powders were on the second place according to the number of illness: 28,54% (304 cases from a total of 1065), higher level considering the gravity of illness.

Figure no. 2. Evolution of silicosis cases in Romania, between 2000 and 2010



Source: Statistic dates Public Health Bucharest Institute, Conf. Dr. Adriana Todea

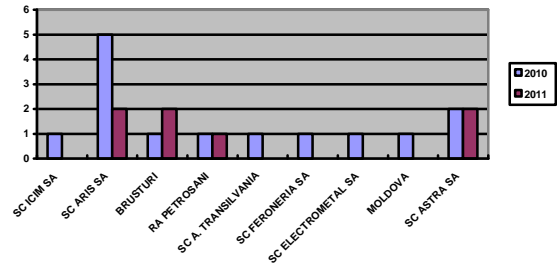
Silicoses

In Arad county, there were registered 14 new cases in 2010 and 7 new cases in 2011, in various economical institutes and professions, accordingly to below figures.

If it is to make a statistic of the repartition of new occupational disease cases, there can be seen that on the first

places there are, with the highest number of illnesses, miners, locksmiths, carpenters.

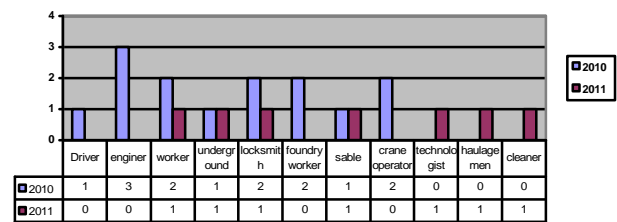
Figure no. 3. Repartition of new silicoses cases on economics institutes in Arad County, between 2010 and 2011



Source: Public Health Arad, Occupational Medicine Department

Figure no. 4. Repartition of new silicoses cases on professions in Arad County, between 2010 and 2011

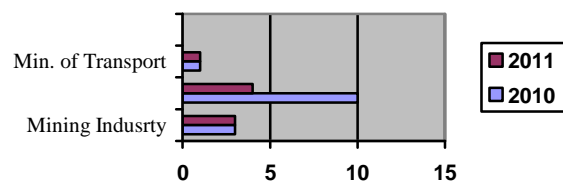
Repartition of new silicoses cases on professions between 2010 and 2011, in Arad County



Source: Public Health Arad, Occupational Medicine Department

Figure no. 5. Repartition of new silicoses cases on branches in Arad County between 2010 and 2011. The Ministry of Industry was on the first place, followed by Machine-Mining and the Ministry of Transport

Repartition of new silicoses cases on branches between 2010 and 2011, in Arad County



Source: Public Health Arad, Occupational Medicine Department

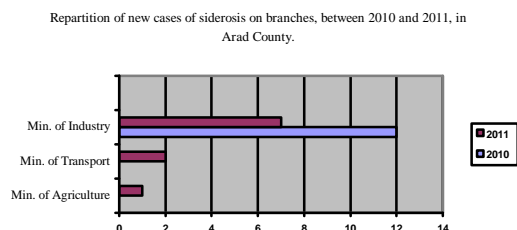
New cases of siderosis, on production branches, economical institutes and professions in Arad County, between 2010 and 2011,

In 2010, there were 12 cases registered within the Ministry of Industry, the predominant professions were: welder, machinist, turner

In 2011, there were 10 cases registered within the Ministry of Industry, Transport, Agriculture.

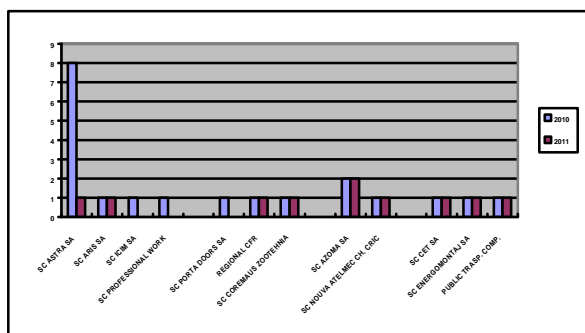
Source: Public Health Arad, Occupational Medicine Department

**Figure no. 6. Repartition of new cases of siderosis on branches in Arad County, between 2010 and 2011**



Source: Public Health Arad, Occupational Medicine Department

**Figure no. 7. Repartition of new cases of siderosis on economics institutes in Arad County, between 2010 and 2011**



Source: Public Health Arad, Occupational Medicine Department

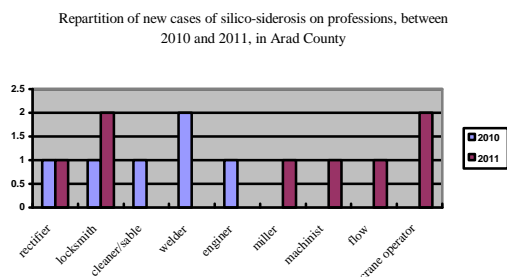
New cases of *silicosiderosis*, on production branches, economics institutes and professions in Arad County, between 2010 and 2011:

In 2010, there were 6 new cases registered within the Ministry of Industry, professions predominant: welder, crane operator, locksmith,

In 2011, there were 7 new cases registered the Ministry of Industry, profession predominant: welder, crane operator, locksmith.

Source: Public Health Arad, Occupational Medicine Department

**Figure no. 8. Repartition of new cases of silicosiderosis on professions in Arad County, between 2010 and 2011**



Source: Public Health Arad, Occupational Medicine Department

The appearance of a serious occupational disease, as professional cancer, and of a certain acute cases of illness: professional lung fibrosis, professional asthma, indicates an

insufficient concern in assuring work conditions without any risks of illness.

The most frequently illnesses were declared as a consequence of constantly exposure to caused factor as: irritating gas and steams, organic powder, textile powder, and other organic composites.

New cases of *BPOC*, on production branches, economics institutes and professions in Arad County, between 2010 and 2011:

In 2010, there were registered 5 new cases:

- Production Branches: Industrial Ministry
- Economical Institutes: SC Astra Vagoane Sa, SC Kao Bakat SA, SC Cimvest SA, SC Imar SA
- Professions: welder, carpenter, mechanic, confectioner

In 2011, there were registered 2 new cases:

- Production Branches: Industrial Ministry
- Economical Institutes: SC Imar SA, SC Repomir Serv SA
- Professions: carpenter, mechanic

Source: Public Health Arad, Occupational Medicine Department

New cases of professional pulmonary fibrosis, on production branches, economics institutes and professions in Arad County, between 2010 and 2011:

In 2010, there were 4 new cases:

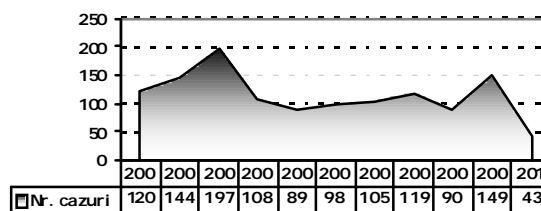
- Production Branches: Industrial Ministry, Construction Ministry
- Economical Institutes: SC Imar SA, SC Astra Vagoane SA, SC Edil Construcții SA, SC Spiact CF
- Professions: welder, painter, locksmith, storekeeper, electrician

Source: Public Health Arad, Occupational Medicine Department

In Arad County, 2 cases of professional asthma were declared, one in 2010 and the second in 2011.

At national level, there can be seen that the total number of professional asthma cases decreased in 2010 comparing with previous years, as below:

**Figure no. 9. Annually numeric distribution at national level of new cases of occupational asthma**



Source: Public Health Arad, Occupational Medicine Department

New cases of professional chronic bronchitis on production branches, economics institutes and professions in Arad County, between 2010 and 2011.

In 2010, there were 2 new cases registered:

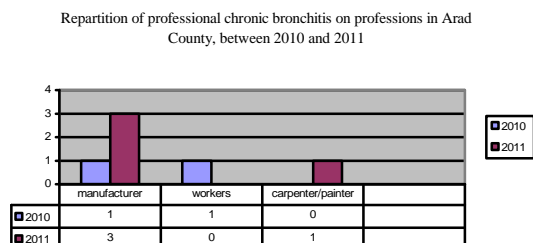
- Production Branches: Industrial Ministry
- Economical Institutes: SC Coindurim SA, SC Manitoba SA, SC Lucian SRL, SC Teba SA, SC Bat SA
- Professions: confectioner, worker

In 2011, there were 4 new cases registered:

## PUBLIC HEALTH AND MANAGEMENT

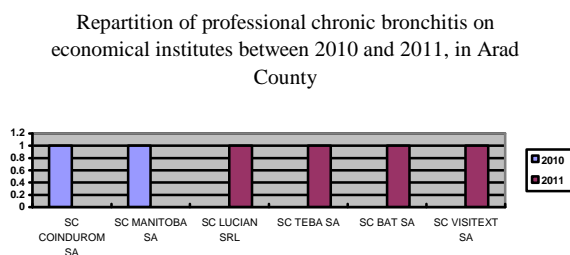
- Production Branches: Industrial Ministry
- Economical Institutes: SC Manitoba SA, SC Lucian SRL, SC Teba SA, SC Bat SA
- Professions: confectioners, carpenter/painter

**Figure no. 10. Repartition of occupational chronic bronchitis on professions in Arad County, between 2010 and 2011**



Source: Public Health Arad, Occupational Medicine Department

**Figure no. 11. Repartition of occupational chronic bronchitis on economics institutes in Arad County, between 2010 and 2011**



Source: Public Health Arad, Occupational Medicine Department

New cases, on production branches, economics institutes and professions in Arad County, between 2010 and 2011,.

In 2010, there was registered 1 case of occupational vibration disease, 1 case of varicose veins at legs, 1 case of professional spondylodiscarthrosis, 1 case of professional pulmonary thrombosis:

- Production Branches: Industrial Ministry, Commerce Ministry
- Economical Institutes: SC Icim SA, SC Electron SA, SC Astra Vagoane SA,
- Professions: confectioner, canteen worker, mechanic, debtor

In 2011, there were registered 3 cases of mist professional phneumoconiosis:

- Production Branches: Industrial Ministry
- Economical Institutes: SC Victoria SA, SC Feroneria SA
- Professions: engineer, welder, squealer

Source: Public Health Arad, Occupational Medicine Department

At national level, in 2011, it was established that the number of professional diseased cause by the oversteering of osteo-musculo-articular apparatus decreased comparing to 2012.

In Arad County was revealed only one case in 2011 (table no. 9).

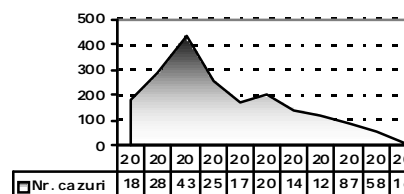
New cases of *dorso-lombar discopathy*, on production branches, economics institutes and professions in Arad County, between 2010 and 2011:

In 2011, there was 1 new case registered:

- Production Branches: Industrial Ministry
- Economical Institutes: SC Nădab Automotive SA
- Professions: confectioner

Source: Public Health Arad, Occupational Medicine Department

**Figure no. 12. Evolution of the number of cases with intoxication in Romania, between 1999 and 2010**



Analyzing the evolution of professional illnesses we observe a decrease of professional morbidity incidence, fact which can be explained in a various ways, because, as we know, there are plenty of "actors" involved in this meter:

- the improvement of work conditions; there are various situations when we have to admit that the new technologies together with the new company's politics which emphasize the new prophylactic energetic measurements, eliminates the exposure to a harmful factors from the working environment and makes the working place safe and health;
- underreporting of those exposed; appears as for unawareness of the real situation at county level: dynamic of the working place, black market, lack of occupational medicine departments who can take care of those exposures;
- the existence of a various professional unreported cases from different reasons: either unknowing them in the relation with work environment, or unknowing them deliberately by the employers, fear that the employee will lose the job, ("healthy worker syndrome"- which appears in the developed industrial countries);
- failure at periodic medical examination of a big number of employees exposed to emissions or failure of special medical investigations, which can confirm the diagnosis of a professional disease.
- small number of the occupational medicine specialists in the county.

### BIBLIOGRAPHY

1. Enăchescu D. Sănătatea publică și management sanitar, Ed. All; 1995.
2. Laczka I, Ghinea D, Cojocaru C. Evoluția riscului și a îmbolnăvirilor prin silicoză în Județul Satu Mare pe perioada 1968-1995, Revista română de medicina muncii. 1996;46(1-2):848-52.
3. Niculescu T. Manual de patologie profesională, Bucuresti; 2002.
4. Niculescu T. Medicina Muncii, ed. Medmun; 2003.
5. Niculescu T, Rusea D. Adezivii în practica medicinei muncii, Ed. Medmun, Bucuresti; 2007. p. 24-7.

6. Niculescu T. Medicina muncii – Manual de boli profesionale, Ed. Medmun, Bucuresti. 2008;1:105-115.
7. Rice LF, Stayner LT. Assessment of silicosis risk for occupational exposure to crystalline silica, Scand J Work Environ Health; 1995. p. 21.
8. Todea A. Boli profesionale în actualitate, Editura Viața medicală, Bucuresti; 2000.
9. Todea A. Ghidul medicului de medicina muncii privind stabilirea aptitudinii în muncă, Ed. Fundației România de mâine; 2007. p. 15-42.
10. Todea A, Rusea D. Cunoasterea riscurilor profesionale: mijloc de protecție a sănătății lucrătorului, Ed. Fundației România de mâine; 2008. p. 14-17.
11. Anuarul statistic al stării de sănătate, Centrul de calcul si statistică sanitară si documentare medicală, Bucuresti; 2009.
12. Lucrare Centrul Național de Statistică și Informatică în Sănătate Publică, Institutul Național de Sănătate Publică, București; 2012.
13. Legea nr. 319 din 14 iulie 2006 a securității și sănătății în muncă.
14. HG nr. 1425/2006 privind Normele de aplicare ale Legii securității și Sănătății în muncă.
15. HG nr. 355/2007 privind supravegherea sănătății lucrătorilor.