

## NEW TENDENCIES AND CONSEQUENCES REGARDING OCCUPATIONAL PATHOLOGY IN ARAD COUNTY

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**ABSTRACT.** Phytoncides and phytoalexins are antibiotic substances that have been isolated from a large number of plants. Tropical plants in particular possess many antibacterial compounds, such as sophoraflavanone G (*Sophora*), calozeylaxanthone (*Calophyllum*),  $\alpha$ -mangostin, and the stilbene oligomers of gnetonal B and gnetin E. Other plants like garlic (*Allium sativum*) and onion (*Allium cepa*), mustard (*Sinapis alba*), horseradish (*Armoracia rusticana*), radish (*Raphanus sativus*) and lichens (like *Centraria islandica* and *Usnea barbata*) also manifest antibiotic properties. The antibacterial activities of sophoraflavanone G.

**Keywords:** Phytoncides, phytoalexins, vegetal antibiotic, bacteria, antibacterial effects

### INTRODUCTION

Changes regarding the types of industrial activities have taken place in Arad County over the last 11 years, leading to new occupational hazards.

These potential hazards should have been therefore reflected in the increase of the number of reported occupation health diseases.

### PURPOSE

The aim of our study is to underline the existence of new hazards, that can lead to Occupational pathology, hazards that are nowhere to be found among reported cases of occupational disease in the last few years, despite the growth of the number of Occupational Health clinics and specialists.

### GOALS

Our goals are to increase the level of awareness and to optimize the practice of prophylaxis in Occupational Health, within the limits of the current legislation, in order to improve both the medical process in our domain and the level of health of employees.

### MATERIALS AND METHODS

Data collected during the past 11 years, regarding the number of employees, number of new cases of Occupational disease and Occupational exposure has been used:

-the number of employees in the county of Arad;

-the number of newly reported cases of Occupational diseases, classified by the type of disease;

-occupational exposure measurements performed in the past 11 years, that have shown excesses in the Weighted Mean Concentration/ 8 hours ( WMC/ 8 h);

-the number of admissions due to diagnosed occupational diseases and occupation-related disease, during the past 11 years, in the Clinical Department of Occupational Health;

### RESULTS AND DISCUSSIONS

We can observe that the total number of workers exposed to toxic emissions has been of a constant level during the period of the study. (Table I). However, we can also observe that the number of workers exposed to dusts, other than free crystalline silica dioxide, as well as the number of workers exposed to organic solvents and irritating gases has risen. We can also notice a rise in the number of excesses regarding the Weighted Mean Concentration/ 8 hours.

**Table 1.** Number of employees exposed to occupational emissions, in Arad County, during 2001-2011

Nr.	Year	Number of employees
1	2001	123 578
2	2002	124 688
3	2003	129 710

4	2004	126 528
5	2005	127 558
6	2006	128 983
7	2007	131 307
8	2008	128 554
9	2009	123 340
10	2010	116 230
11	2011	123 010

**Table 2.** Emission measurements in 2001 compared to 2011 (toxicology)

Year	Total nr. of	SiO <sub>2</sub>	Other Dusts	Pb	Cr	Hg	Other Metals	Benzene Homologues	Other Organic Solvents	Other Organic Compounds	Irritative gases	CO	Cianydes	Other	WMC BREAC
2001	1400	-	332	15	15	3	27	108	260	64	312	170	24	9	543
2002	1200	-	51	15	3	-	32	165	431	153	195	59	21	-	179
2003	1850	20	456	45	7	-	6	212	830	101	129	24	20	-	362
2004	3260	25	1007	80	30	-	95	315	938	75	465	175	40	-	792
2005	5135	10	1478	30	28	-	60	654	1408	68	842	470	31	40	1112
2006	4633	30	1070	60	20	-	105	491	1311	50	1009	463	18	-	863
2007	3777	10	852	71	-	-	5	636	1014	95	743	305	5	45	964
2008	3294	50	820	50	-	-	10	405	900	155	635	260	-	-	606
2009	3525	-	813	45	10	-	20	395	855	185	815	395	10	-	570
2010	8678	-	1620	130	10	-	110	730	2346	790	2040	880	20	-	2094
2011	4397	20	675	70	5	-	20	370	1261	539	954	467	10	5	938

**Table 3.** Physical emissions measurements in 2001 compared to 2011

Year	Noise	Lighting	Microclimate	Total
2001	187	18	24	229
2002	67	11	20	98
2003	58	20	10	88
2004	158	21	15	194
2005	246	79	10	335
2006	288	118	25	431
2007	236	76	17	329
2008	223	99	51	373
2009	209	80	36	325
2010	286	148	49	483
2011	270	154	63	487

The number of signaled and reported new cases of occupational diseases in the period of study has fallen since 2001. The number of admissions of patients

suffering from occupational disease and occupation related diseases in the Clinical Department of Occupational Health has remained at a constant level.

**Table 3.** Newly reported cases of Occupational diseases and number of Occupational Health Clinic in Arad County, during the period of the study (2001-2011)

Year	Number of Occupation Health clinics	Number of newly reported cases of Occupational diseases
2001	1	52
2002	1	26
2003	11	17
2004	17	35
2005	20	22
2006	24	19
2007	28	43
2008	31	35
2009	32	31
2010	35	45
2011	37	32

Among the total number of newly reported Occupational diseases, the greatest percentage is detained by Occupational respiratory diseases.

Most of the cases regarding possible Occupational Health diseases have been signaled by family doctors or by doctors of a specialty other than Occupation Health, despite the significant increase in the number of Occupational Health Clinics as well as the number of ambulatory Occupational Health specialists, since 2001.

Medical Doctors, regardless of their specialty, have the obligation to signal and report to the Occupational Health Department/Clinic any suspicion of Occupational disease, as stated in H.G. 955/2010. This especially concerns Occupational Health doctors.

The existence of a certain hazard in a working environment does not necessarily mean exceeding the maximum allowable Weighted Mean Concentration, what it implies is the presence of certain emissions in the working environment.

We might hence ask ourselves why certain workers develop a certain Occupational disease, whilst others do not, despite working in the same environment. The answer to this question lies in the individual susceptibility of a particular worker, that is represented by a certain genetic conformation that predisposes the individual to a certain category of diseases.

Currently, the number of workers exposed to free crystalline silica dioxide has fallen, yet the possibility of developing silicosis for those with a prolonged exposure to silicosis inducing dusts has not diminished.

The paradoxical situation we are currently facing due to the relatively constant number of workers exposed to emissions, the rising number of Occupational Health Clinics, and the small number of newly reported cases of Occupational diseases raises numerous questions regarding the quality and efficiency of the periodic health assessments.

The possible causes of this situation could be represented by the lack of knowledge of Occupational diseases, disobedience regarding the current laws or the direct contractual relationship between the Occupational Health physician and the employer.

## **CONCLUSIONS**

The new hazards to which the workers in Arad County are exposed is not reflected in the Occupational pathology reported in the last years, leading to the accentuation of a state of underreported Occupational diseases.

It is of paramount importance that that all Occupational Health practitioners respect the current law regarding both the way periodic health assessments are performed and the way Occupational disease are reported.

## **REFERENCES**

Government Decision H.G. 355/2007 regarding the monitoring of worker's health;

Government Decision H.G. 955/2010 regarding modifications to the methodological norms of applying the Work Health and Safety Law 319/2006 approved by H.G. 1425/2006;

Health Ministry Order nr. 1220/2010 regarding the approval of the Practice Guide for the Occupational Health Specialty

Government Decision H.G. 1169/2011 regarding the modification of H.G. 355/2007;

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