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Contamination of food products from water pollution, soil and monitoring of the chemical-physical parameters of the water system.

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ABSTRACT

Environmental pollution is any discharge of toxic material in water, soil or air that causes acute (short-term), or chronic (long-term), pollution, to the detriment of environmental ecological balance or adversely affects quality of life. The overwhelming industrial and technological development in the twentieth century and the growing demand for underground resources has brought great benefits and benefits to human life. Also, these activities are among the main sources of pollution of the environment we live in. Today's greatest environmental pollutants are caused by technological processes, which imply air, water and soil pollution and, consequently, their impact on human life, flora and fauna. Among the most environmentally harmful elements released in nature are heavy metals such as; Pb, Zn Ni, Se, Hg and Cd.

Keywords: Pollution, water, air, soil, food.

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INTRODUCTION

Many metals are toxic in high concentration, while others play an important role in living things. In this view the metals can be classified as useful or harmful. Among the most well-known elements essential to human health are: Fe, Zn, Cu, Cr, Ni, Co, Mo, and Se[Australian- Government, The Department of Health, 2012]. Although most metals are toxic, only a few of them are large environmental pollutants due to their extensive use [Branza, L., Dring M., Gavrilescu, M., 2005]. The US Environmental Protection Agency (EPA), has classified 13 metals as the primary pollutant: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, and Zn[Connell, D.W., Miller, G.J., 1984].

By environmental pollution we mean an ineffective change in the natural environment that is presented in whole or in part as a by-product of human activity, which negatively changes the distribution of energy flow, radiation levels, physical and chemical composition of the environment And the density of livestock production. Risk = f (exposure * toxicity), [Council Europe; 1996]. We are fed with a large number of food products but only when health problems arise we analyze that foods have been contaminated [Çulaj, A., 2005]. Mostly the contamination comes from contamination of heavy metals and heavy metals [Davis, Jr, K. B. &McEntire, M. E., 2006].

MATERIAL AND METHODS

Cow milk is one of the most produced products in Kosovo, which is mainly found on the unprocessed and uncontrolled market and is one of the most consumed products of the day [Di Giulio, R. T., Benson, W. H., Sanders, B. M., and Van Veld, P. A., (1995),]. The case study of fresh cow's milk analysis in three municipalities of Kosovo, we see that nutrition and location are a determinant factor of heavy metal values [Dreshaj, A., (2014),]. Thus, the values of the heavy metals analyzed in this paper; Pb, Zn and Cd, in cow's milk, as the animals were mainly fed in the stalls with the provided food, are significantly lower than the values earned by Milk samples taken at locations by animals that have pastures in meadows close to motorways or very low values in places that have been fed in high mountainous areas [Ferguson, HW., 1989]. From the initial analysis we notice that Pb exceeds the maximum allowed maximum values in all locations except in high mountainous areas. This makes us understand that animal husbandry and feeding habits are very important factors that affect the quality and extent of milk contamination [Filho, D.E., Torris, M.A., Tribes, T.B., Pedrosa., R.C., and Soares, C.H.L., 2001].

RESULTS

Determining the presence of heavy metals in these products is done by means of the ICP apparatus. Metals can be appropriately determined by emission spectroscopy using the ICP apparatus. A major advantage of ICP emission spectroscopy which is applied for environmental analysis is that by this method (AOAC, 2002), several metals may be determined at the same time.

Table 1: Sample values: Pb, Zn and Cd, of nourished animals in three sets

Elements / mg/l	The standard parameters recommended by WHO, 1996	Istog	Peja	Klina
Pb	0.020	0.068	1.725	0.663
		0.057	1.300	0.566
		0.048	1.344	0.577
Zn	3-5	0.46	0.67	0.52
		0.48	0.69	059
		054	058	0.60
Cd	0.005	0.013	0.042	0.027
		0.011	0.044	0.030
		0.012	0.045	0.031

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Fig 1: Graphical sampling values: Pb, Zn, and Cd, in three animal feed troughs

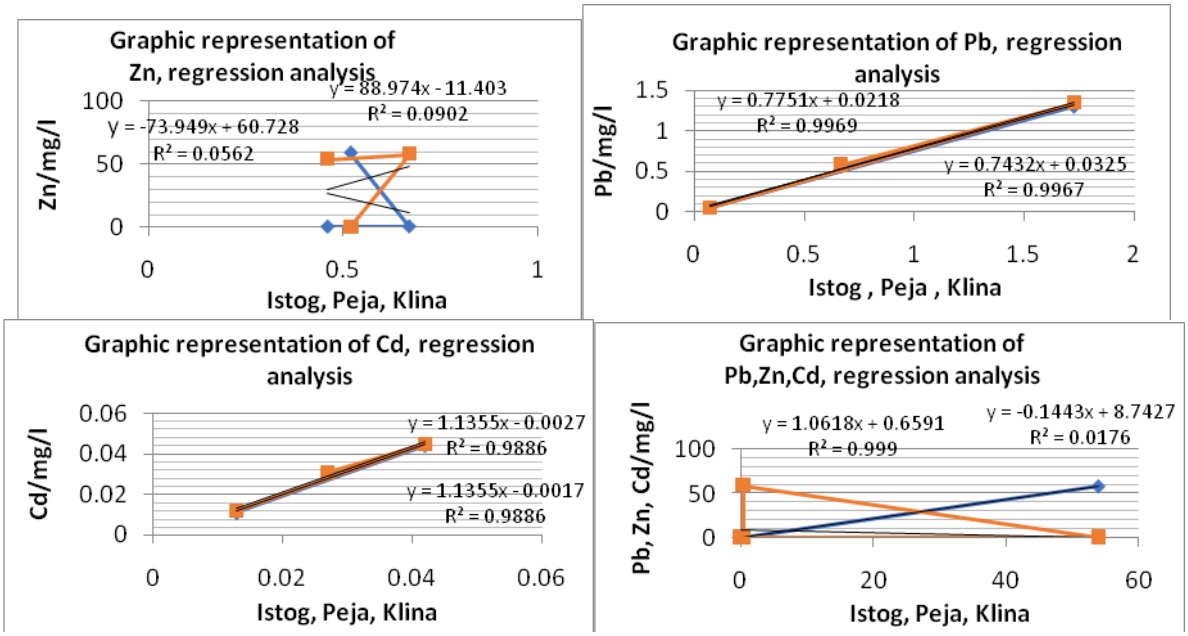
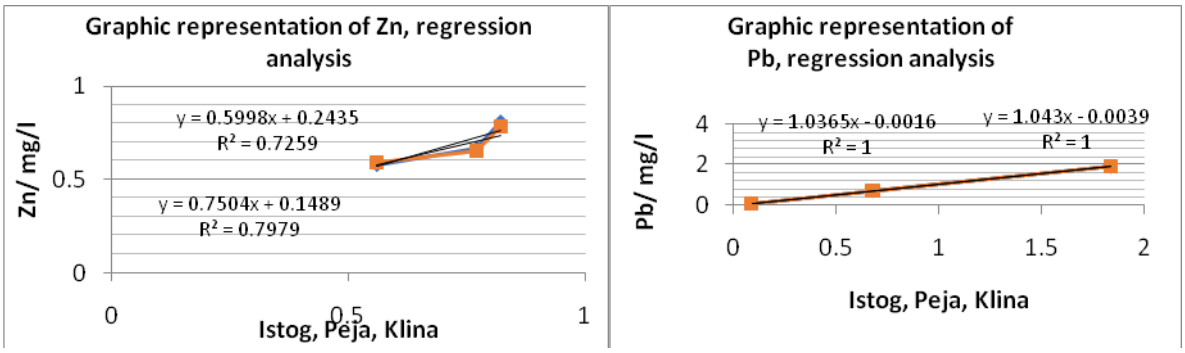


Table 2: Sample values: Pb, Zn and Cd, of nourished animals in three places in the nature near the motorways

Element name mg/l	WHO Recommendation, 1996	Istog	Peja	Klina
Pb	0.020	0.088	1.835	0.677
		0.089	1.900	0.701
		0.090	1.911	0.699
Zn	3-5	0.56	0.77	0.82
		0.58	0.67	0.81
		0.59	0.65	0.78
Cd	0.005	0.01	0.052	0.047
		0.02	0.042	0.057
		0.03	0.044	0.049

Fig 2: Graphical sampling values: Pb, Zn and Cd, of the fed animals near the motorways



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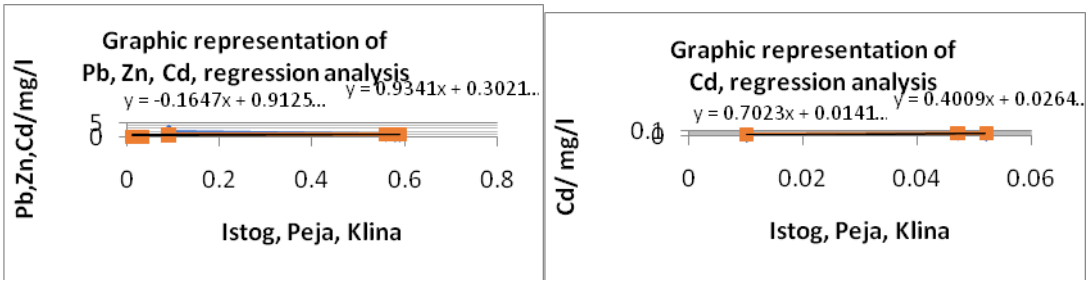
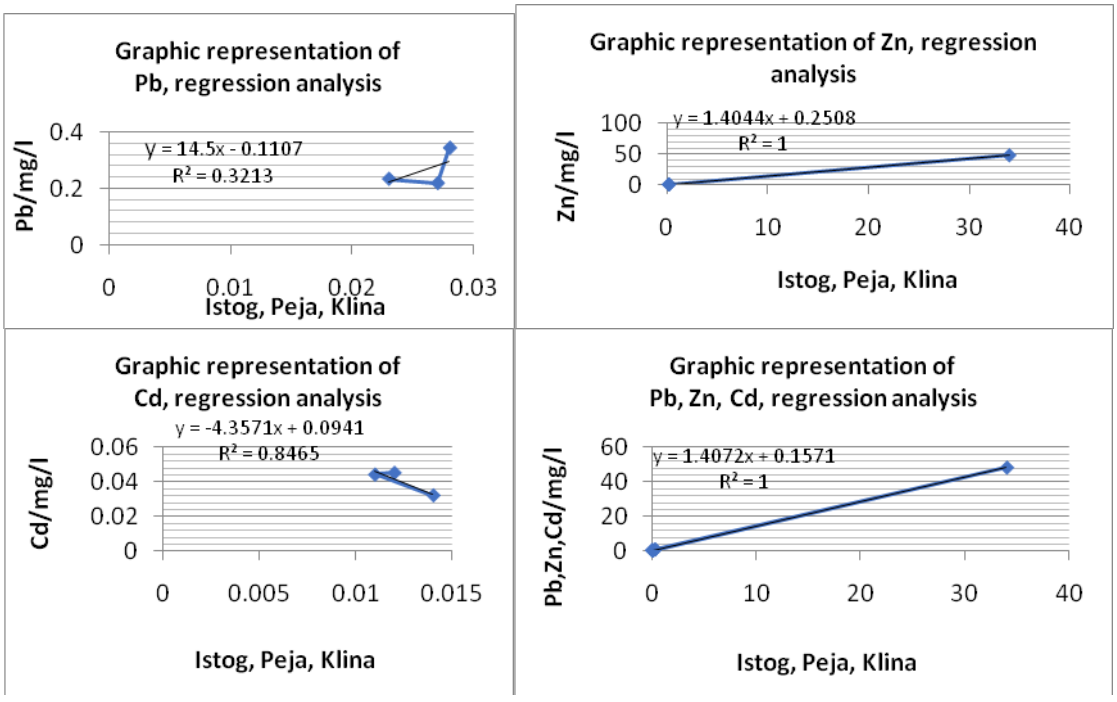


Table 3: Sample values of naturally nourished animals of the mountain Nemuna

Name element mg / l	WHO Recommendation, 1996	Peja	Istog
Pb	0.020	0.023	0.235
		0.027	0.220
		0.028	0.344
Zn	3-5	0.26	0.57
		0.28	0.69
		034	048
Cd	0.005	0.014	0.032
		0.011	0.044
		0.012	0.045

Fig 3: Graphic representation of heavy metals: Pb, Zn and Cd, of the feed fed in the mountain



After the results obtained from the analysis of the dairy milk, the presence of heavy metals presented in the table: 1, 2, 3, we note that the amount of heavy metals varies from region to region, as evidenced by the regression analysis.

Analysis of heavy metals in humans fed with this milk-Pb transport, in humans, continued other research methods, we analyzed blood samples to patients who feed this milk from the analyzed regions.

Research data shows the samples examined for the presence of Pb in blood in 2015/2016, resulting in over 10 µg/dL. Blood samples were taken in 120 patients in the three municipalities that have been studied for

the presence of heavy metals, fed animals in different locations. Ages are resolved and divided into four age groups Table 4.

Table 4: Age groups and number of patients analyzed Pb in blood µg/dL, year 2015/2016

Total number of examined µg / dL	Age 0-11	Age 12-18	Age 19-45	Age 46-71
120	30	30	30	30

Based on the statistics of the veterinary agency in Prishtina, the amount of milk production in Kosovo is 110 liters per capita, which results in 0.30 L daily per capita.

D=Exposure Dose (mg/kg/day), A=Concentration Contamination (mg/l), IR=Contaminated Milk Consumption (L/Day), D=(A*IR*EU)/BW where: EU=Exposure factor (Daily exposure=1), BW=Body weight calculated according to standard values.

Table 5: Tabular representation of standard deviation samples

No	Parameters mg / l		
Average samples	Pb	Zn	Cd
Averages	0.711	0.41000	0.03111
Standard deviations	0.61234	0.181234	0.006923

Table 6: Presentation to adults and children calculating the amount of: Pb, Zn, Cd, in the blood

No		D= AxIRxEU/BW	mg / kg / day
Pb	Adults	(0.711 x 0.30 x 1) / 75 = 0.2133 / 75	0.002844
	Children 1-9	(0.711 x 0.30 x 1) / 15 = 0.2133 / 15	0.01422
Zn	Adults	(0.41000 x 0.30 x 1) / 75 = 0.123 / 75	0.00164
	Children 1-9	(0.41000 x 0.30 x 1) / 15 = 0.123 / 15	0.0082
Cd	Adults	(0.03111 x 0.30 x 1) / 75 = 0.00933 / 75	0.000124
	Children 1-9	(0.03111 x 0.30 x 1) / 15 = 0.00933 / 15	0.000622

CONCLUSIONS AND RECOMMENDATIONS

According to data provided by CMF Istog, Peja, Klina from 2015-16, a total of 120 persons aged 1 month to 9 years have been examined, of which 65 children have resulted in more than 45 µg/dL the amount of Pb in the blood and Are still in treatment who have only consumed cow's milk an average of 2 daily diets, while the rest of the majority resulted in over 10 µg/dL Pb. Animals fed at places close to motorways exceed 45 µg/dL. Table 3 indicates that persons who have been fed with milk in high mountainous areas from the blood samples results that there are no exceedances of Pb parameters in the bloodstream. Table 1 the results show that Zn and cadmium are in the normal parameters, whereas the bullet is in the maximal settings and it results that animals are fed with food in the stall that resulted in the controlled parameters.

In order to mitigate pressures on the environment it is recommended to undertake the main measures:

- Enabling citizens to become more aware of environmental protection;
- Sensibilization of manufacturing organizations in reducing the release of order elements without prior chemical-biological treatment;
- Reduction and recycling of urban and industrial waste;
- Management and use of more qualitative and ecological fuels;
- Use of alternative transport that causes less environmental pollution;
- Limitation of the use of old and non-catalytic vehicles;
- Rehabilitation of existing road infrastructure;
- Strict monitoring of environmental laws and their application.

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