

STUDY ON THE IMPACT OF ASBESTOS ON THE ENVIRONMENT AND ON THE POPULATION OF ALBA IULIA

Elena MARICA

Scientific Coordinator: Lect. PhD Eng. Mihai Teopent CORCHEȘ

“1 Decembrie 1918” University of Alba Iulia, 5, Gabriel Bethlen, 510009, Alba Iulia, Romania,
+400258812630, +400258806273, +400258812630, Email: marzanicoleta10@gmail.com,
corchesmihai@yahoo.com, a_roxananadina@yahoo.com

Corresponding author email: elenamarica93@yahoo.com

Abstract

The purpose of this paper is to identify with the help of the Geographic Information System the surfaces covered with asbestos plates in the city of Alba Iulia. Considering the relatively large areas covered with asbestos-containing materials, we assessed the impact on the environmental factors water, air, soil and population. The results confirm that the population of Alba Iulia is predisposed to lung cancer, asbestosis, mesothelioma, pastures and meadows, the important number of cow stock and possibilities to produce ecological milk.

Key words: evolution, milk production, NW Region, Romania, trends.

INTRODUCTION

We intend to identify in this study all the buildings in Alba Iulia covered with asbestos plates in 2008 and to assess their impact on the environment and the population of this city.

Asbestos is a fibrous mineral with very good resistance to high temperatures and high durability. According to legislation in the field of health and safety at work, the term asbestos designates the following fibrous silicates: actinolite of asbestos; grinding (asbestos) of asbestos; asbestos antofilite; chrysotile; asbestos; tremolite of asbestos. (<http://legislatiamuncii.manager.ro/a/9857/ssm-ce-este-azbestului-si-care-sunt-efectele-lui-asupra-sanatatii-lucratorului.html>)

In Europe since 1990 there are regulations restricting the use of asbestos, so the amount of asbestos used has decreased from 5 million tons to 2 million tons

Since 2005, the European Commission has banned the use and marketing of products containing asbestos.

In Romania, pursuant to Article 12 (1) of H.G 124/2003, all activities relating to the marketing and use of asbestos and products containing asbestos since 1 January 2007 are forbidden in order to protect the health of the population and the environment. In 2006 it was

modified this H.G 734/2006 specifying that asbestos can be used up to the end of its life cycle.

According to the Asbestos Occupational Exposure Limitations Guide issued by the National Public Health Institute, asbestos fibers in the air can be inhaled and reach the lungs, causing diseases such as asbestosis, mesothelioma, lung cancer and other cancers. Limit values of asbestos concentration in the air are 0.1 fibers / cm³ air (0.1 f / cc) weighted average with time - 8 hours (TWA = time weighted average) respirable fractions. Sampling and determination is done only by laboratories empowered by the Ministry health. (Metes, 2000).

According to Annex 2 of H.G 124/2003, products containing asbestos and which must be specially considered and prohibited for marketing and use are: toys, materials or preparations for application by spraying, finished products marketed to the population in the form of powders, smoking articles such as pipes or cigarette lighters, catalytic filters and insulating devices incorporated in catalyst heaters using liquefied gas, varnishes and paints, liquid filters, road cover if the fiber content its asbestos exceeds 2%, mortar, protective coatings, fillers, seals, jointing

compounds, mastics, glues, powders and decorative finishes

The working techniques for planning the demolition and removal of structures containing asbestos include:

- a) Ways of remediation of asbestos-containing material (softening, collection, use of hand held devices, closing in bags, labeling, etc.).
- b) Ways of access to the asbestos structure.
- c) Description of the material demolition procedure: flushing both sides with a low pressure pump before removal and before dismantling (to be attached the documentation of the products used and the pump data sheet).
- d) Disassembly methods avoiding fragmentation of the material, collecting any parts that have ricocheted or broken pieces.
- e) Description of the ground transportation system of there moved material.
- f) Form and location of the material before being sent to the warehouse: according to the legislation in force.
- g) Description of how to fix the premises: daily cleaning or as many times as necessary. (Balzamo et. all, 2007)

Asbestos-containing wastes can be disposed of in hazardous waste and non-hazardous waste landfills with separate cells for the storage of asbestos waste (Metes, 2000).

Although there is an enormous amount of asbestos-containing products at national level, there are only two hazardous waste landfills that provide services to third parties, including for asbestos-containing waste. These cover complex waste management activities including take over, transport, temporary or final storage, processing etc (Ionescu, 2011).

Asbestos removal techniques are: Wetting for thermal insulating materials or for asbestos-containing materials on impermeable surfaces; controlled dry deposition involving local aspiration or coating of insulated components as well as cutting and removal of a complete section (S.L.I.C, 2006).

MATERIALS AND METHODS

According to our study in the city of Alba Iulia, in 2008 there was an area of 177225 m² covered with asbestos tiles. Figure 1 shows buildings covered with construction materials containing asbestos.

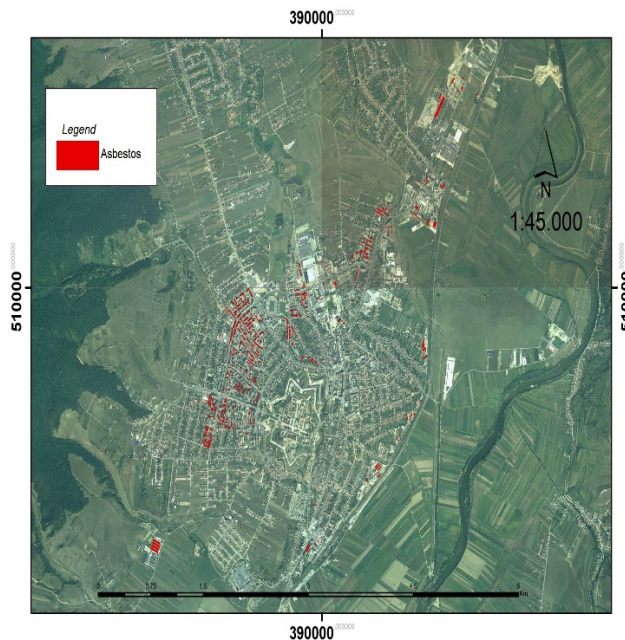


Figure 1. Areas covered with asbestos

Due to precipitation, wind, hail, freeze-thaw phenomenon, asbestos-cement tiles can degrade, and asbestos fibers can be broken up by being dispersed into the atmosphere in water or on the ground.

As regards the assessment of the impact of asbestos on environmental factors, it was found that this pollutant could affect air quality by dispersing asbestos fibers into the atmosphere, soil quality due to asbestos waster eaching the soil, and water quality either due to water pipes produced from asbestos or because of the rain that washes the asbestos roofs. Of the environmental factors water, air, soil the most affected factor is air due to the properties of asbestos.

The assessment of the air assessment score is - 54, which means that asbestos is a major negative impact on the air. The results of the overall impact assessment are presented in the table 1.

Population is the major factor affected by the irrational use of asbestos. Inhabited asbestos fibers reach the lungs causing various health problems for which no cure has yet been found. The result of the asbestos impact assessment confirms that the population of Alba Iulia is prone to lung cancer, asbestosis and mesothelioma.

Table 1. Results on the assessment of the impact of asbestos

The impact of asbestos							
Categories of impact Environmental factors	A1	A2	B1	B2	B3	SE	CI
The water	1	-1	3	2	2	-7	-A
The ground	1	-1	3	2	2	-7	-A
The air	3	-2	3	3	3	-54	-C
The population	4	-3	3	3	3	-108	-E
Rating score						-176	-E

Since the effects of inhalation of asbestos fibers may occur between 15 and 40 years, depending on factors such as smoking, age, duration, and inhalation, it is very difficult to quantify the number of people affected within a certain period of time

CONCLUSIONS

In the city of Alba Iulia, according to the study, was an area of 177225 m² covered with asbestos plates in 2008, one year after according to H.G. 124/2003 on the prevention, reduction and control of environmental pollution with asbestos is prohibited all activities related to the marketing and use of asbestos and products containing asbestos. Using the Rapid Impact Assessment Matrix (RIAM) it has been demonstrated that asbestos-containing construction materials can affect the

quality of air, soil, water, and especially the health of the population.

By inhalation, asbestos fibers reach the human body where after a period of time they can cause different types of cancer for which treatment has not yet been found.

REFERENCES

- Balzamo S., Maggiolo S., Vestri G., 2007, Guidance for the management of wastes containing asbestos, Galați, p. 9.
- DHI, Introduction to RIAM: Rapid Impact Assessment Matrix, p. 3
- GIS
source: <https://www.nationalgeographic.org/encyclopedia/geographic-information-system-gis/>, 2018.
- Governmental decision 124/ 2003 on prevention, reduction and control environmental pollution with asbestos.
- Governmental decision 734/2006.
- Ionescu S. , 2011, Theoretical and Applied Economics, Waste management with asbestos content in Romania and the European Union, Volumul XVIII (2011), No. 10(563), p. 100.
- Metes Dana, 2000, Exposed risk surveillance guide professional to asbestos, Bucharest, p.12,33).
- S.L.I.C., 2006, Guide to Best Practices for Preventing or Reducing Asbestos Risk, Europa, p.72.
- What is the asbestos and what are the effects on the workers health? Source: <http://legislatiamuncii.manager.ro/a/9857/ssm-ce-este-azbestului-si-care-sunt-efectele-lui-asupra-sanatatii-lucratorului.html>, 2018.
- Westminster College, Geographic Information Systems, p.2.
Source: <https://www.westminster.edu/staff/athrock/GIS/GIS.pdf>.

