

Ecometry of bioaggressiveness of asbestos  
and silicates by human Yin-Yang energy analysis  
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Currently, there is an urgent need to develop a technology for lowering the hazard class of asbestos. In the countries of the Single Economic Community (EEC), since January 1, 2005, a ban on the use of asbestos has been in effect, since the World Health Organization (WHO) has recognized it as an unconditional fibrocarcinogen. This led to the "asbestos crisis" in the form of an unsatisfied demand on the world market, since there is no, and will not be, an alternative material with such a uniquely wide range of properties.

The authors of this study have developed a technology for lowering the hazard class of asbestos. The ecometric assessment of silicates is based on the concept of human Yin-Yang energy balance. This technology is suitable for industrial use. The asbestos hazard class has been downgraded to the lowest 4th. The Yin-Yang energy balance showed that the modified chrysotile asbestos acquired the characteristics of a potential drug.

This technology is applicable in the conditions of both a mining enterprise and producing asbestos products, as well as for the disposal of previously produced products, buildings, structures and fire-resistant interiors.

This work also substantiates an ecometric technique that can supplement the criterial methods for assessing the system of classification of working conditions depending on the degree of hazard and danger of factors of the working environment, the severity and intensity of the labor process (Guide R.2.2.755-99). The eco-metric methodology has been developed taking into account the regulatory legal acts of the state measurement system, which make it possible to fully provide metrological support for medical equipment (Law of the Russian Federation of April 27, 1993 No. 4872-1 "On ensuring the uniformity of measurements" and Federal Law of December 27, 2002 . № 184-ФЗ "On technical regulation") [1].

There is a big gap in the system of technical ecometric measuring instruments - the absence of a metrologically substantiated method for assessing the biological effect of silicates (in particular, asbestos) on the individual's body by instrumental methods.

Ecometry of such a large number of parameters by existing clinical and morphological methods on laboratory animals is very difficult. Ecometry of this type refers to multifactorial experiments, its implementation is very long and expensive. A fast and cheap method is needed in this section of silicate ecometry. In particular, in predicting pneumoconiosis caused by silicate-containing substances, taking into account their structure, surface condition, its nanostructure and activity of Bronsted-Lewis centers, the genesis of the mineral, their combination with other substances, the influence of technological impact, aging, crushing, steaming, and other factors ...

In the ecometry of silicates, as a section of metrology, there is a methodological gap - the absence of a technical (working) measuring instrument in the presence of only a reference method (the method of clinical morphological studies using laboratory animals of clean lines), and a simple measuring instrument is needed for a doctor of sanitary and epidemiological supervision. This method is necessary for the rapid and reliable ecometric evaluation of silicates, as a complementary reference method using laboratory animals, in a factory laboratory, building materials exhibition, lecture hall, etc.

This ecometric method is based on the concept of the balance of Yin and Yang energies in accordance with the canons of Chinese medicine.

The following is a brief summary of a method that fits into the existing legal framework. The method of electro-acupuncture diagnostics is taken as a basis, where a person is a sensitive element (sensor) of silicate bio-properties. Systems, organs and tissues of a person are projected onto biologically active points (BAP) of the skin, according to the electrical conductivity of which the state of the organ (system) is assessed. In this case, the minimum resistance (100 units of the scale of the device) induces an extreme degree of inflammatory or allergic process - the upper level of Yang energy. On the contrary, increasing the resistance of the BAP to 100 kΩ. (0 scale units) indicates a degenerative process - the upper level of Yin energy. The physiological corridor (norm) is 50–65 units. the scale of the device corresponds to the balance of Yin-Yang energy. By placing the test substance on the medication plate, we predict its effect on certain physiological systems of the body with further incorporation of this substance. By changing the readings of the device during drug testing of a substance, we determine the direction of the process in the direction of inflammation or degeneration (displacement of the energy balance in the direction of Yang or Yin).

Silicates and wood were selected according to the reference book "Harmful substances in industry" [3], which made it possible to create an ecometric calibration scale of 7 well-known substances. This scale was used to compare 2 modifications of chrysotile-asbestos A6-45 with unknown eco-metrics that were treated with the modifier. Heis a producer of E. coli (*Escherichia coli*), which was introduced into the test samples in ratios from 10 five to 10-6 dry

substance by weight, which gives an irreversible effect of improving the ecometric properties of silicates and improving the balance of Yin-Yang energies. There is a fundamental possibility of introducing a powder modifier, but this is not technologically advanced and inapplicable for the treatment of surfaces (for example, building structures or slate) of asbestos-containing products. It should be noted that the existing laboratory base makes it possible to produce a modifier in the amount of 2 tons per year, sufficient to modify 2,000,000 tons of chrysotile asbestos.

During the study, a significant weakening of the Yin energy and, accordingly, the degenerative properties of asbestos modification No. 1 was noted, close to the level of ecometric indicators of river sand, cement and red clay, which indicates a decrease in the hazard class of modified asbestos from III to IV class.

#### Brief description of the method

Electro-acupuncture diagnostics according to R. Voll (Methodical recommendations 98/232 of the Ministry of Health of the Russian Federation) using the expert computer system "IMEDIS-EXPERT" in the mode of diagnostics and selection of drugs was used as a basic ecometric tool.

Initially, the initial state of the subject was determined by 10 control points of measurement (CTI) of the meridians: lymphatic system, lungs, colon, nervous degeneration, blood circulation, allergy or vascular degeneration, epithelial-parenchymal degeneration, endocrine system, heart, small intestine. At the same time, the initial state of the listed physiological systems of the subject was determined in conventional units. on a scale according to R. Voll from 0 to 100. Further, by placing the test substance on the medication plate, the change in state was determined in comparison with the initial one, with the calculation of the effect of each substance. Substances used: river sand, river sand, modified river sand, Uralasbest asbestos, A6-45, A6-45 technological modification No. 1, A6-45 modification No. 2, red clay, fresh birch wood, Portland cement M300 in weighed portions of 100 mg. Then, all 10 deviations were summed up for each substance, thereby determining the total neutrality of the substance or the tendency to stimulating or degenerative processes in general for this group of CTI, indicated by signs, respectively (+) or (-).

Further, on the basis of the data obtained, a table (Table 1) of the integral evaluations of the investigated substances was compiled.

Table 1

Integral ecometric assessments of substances of III - IV hazard class

Class dangers substances [3]	Integral scale ecometric indicators in conv. units according to R. Voll	Integral index researched substances ( $\Sigma = \Delta_1 + \dots + \Delta_{\text{nine}}$ )	Substance
IV	+ 30	+ 29	Fresh birch wood
	+ 25		
	+ 20		
	+ 15	+ 12	Sand river ground modified
	+ 10		
	+ 5	0 ... + 5	Cement, red clay
	- five	- five	River sand, asbestos A6 - 45 modification No. 1
	- 10	- 10	Asbestos A6 - 45 modification No. 2
III	- fifteen		
	- twenty		
	- 25	- 24	Asbestos A6 - 45
	- thirty	- thirty	River sand, ground

#### Analysis of test results

According to existing concepts, wood red and cement are classified as the lowest IV hazard class. Their integral indicators are shown in table. 1. These substances give the likelihood of the smallest pneumoconiosis.

River sand ( $\Sigma = -5$ ) is an aged mineral, therefore it is not very aggressive. Here one can draw an analogy with quartz sand of deserts, which does not cause pneumoconiosis [2].

Clay red ( $\Sigma = +5$ ) already has signs of beneficial effects and is used in medicine. Cement is in the same class ( $\Sigma = 0$ ). The likelihood of pneumoconiosis is low.

A sample of fresh wood ( $\Sigma = +29$ ) bears signs of usefulness for humans. Among these potentially useful substances is modified ground sand ( $\Sigma = +12$ ), which initially had fibrogenic properties before modification ( $\Sigma = -30$ ) - III hazard class. As a result of technological modifying treatment, it passed into the IV lower hazard class and is located between clay and wood in terms of the integral indicator. According to this indicator,  $\Sigma = +12$ , it can be classified as useful substances.

Similarly, asbestos A6 - 45 ( $\Sigma = -24$ ) of factory delivery, after modifying treatment, reduced its aggressiveness to  $\Sigma = -5$  (mod. No. 1) and  $\Sigma = -10$  (mod. No. 2) and approached river sand in terms of ecometric indicators.

table 2

Comparative characteristics of substances before and after processing

P / p No.	Name substances	Treatment type	Integral index of the investigated substances ( $\Sigma = \Delta_1 + \dots \Delta_{\text{nine}}$ )		Change properties
			Before processing	After processing	
one	River sand 0.05 - 0.25 mm	Not processed	- five	-	-
2	River sand	Grinding 0.05-0.25 mm	- five	- thirty	- 25 deterioration
3	Sand river ground modified	Modification	- thirty	+ 12	+ 42 improvement
4	Asbestos A6-45	-	- 24	-	-
five	Asbestos A6-45 No. 1	Modification No. 1	- 24	- five	+ 19 improvement
6	Asbestos A6-45 No. 2	Modification No. 2	- 24	- 10	+ 14 improvement

Additionally, an ecometry of 2 types of chrysotile asbestos A6-45 and A6-45M modification No. 1 was carried out at 10 points of the lung meridian. Measurements through deviations in modulus from the physiological norm corridor of 50-65 units, which corresponds to the balance of Yin-Yang energies.

Table 3

Testing of three types of asbestos along the lung meridian.  
Asbestos testing (right hand)

P / p No.	Lung meridian points (right hand)	The original condition	Asbestos A6-45	Asbestos A6-45M	Crocidolite (SOUTH AFRICA)*
one	Alveoli	75	79	72	40
2	Mediastinal plexus.	72	76	59	47
3	KTI	61	44	57	39
4	Bronchioles	58	68	68	fifty
five	Pleura	52	61	47	twenty
6	Bronchi	63	68	47	fifty
7	Bronchial plexus	66	66	64	43
eight	Trachea	68	67	55	37
nine	Larynx	69	61	54	41
10	Laryngopharynx	68	70	60	24

\* Crocidolite sample No. 14007 (Orange River, South Africa) presented by the Mineralogical Museum named after Fersman RAS.

Table 4

Asbestos testing (left hand)

P / p No.	Lung meridian points	The original condition	Asbestos A6-45	Asbestos A6-45M	Crocidolite (South Africa)
one	Alveoli	78	78	72	46
2	Mediastinal plexus.	62	69	66	22
3	KTI	55	67	62	five
4	Bronchioles	52	thirty	39	27
five	Pleura	78	67	60	41
6	Bronchi	40	74	65	24
7	Bronchial plexus	53	73	51	35
eight	Trachea	78	74	63	59
nine	Larynx	69	67	66	fifty
10	Laryngopharynx	76	70	69	40

Table 5

Table of deviations in modulus from the physiological norm corridor (50-65 conventional units), right hand

P / p No.	Lung meridian points	The original condition	Asbestos A6-45	Asbestos A6-45M	Crocidolite (SOUTH AFRICA)
one	Alveoli	10	fourteen	five	10
2	Mediastinal plexus CTI	7	eleven	0	3
3		0	6	0	eleven
4	Bronchioles	0	3	3	0
five	Pleura	0	0	3	thirty
6	Bronchi	0	3	3	0
7	Bronchial plexus	one	one	0	7
eight	Trachea	3	2	0	13
nine	Larynx	4	0	0	nine
10	Laryngopharynx	3	five	0	26
Σ - sum of deviations		29	45	fourteen	109

Table 6

Table of deviations in modulus from the physiological norm corridor (50-65 units), left hand

P / p No.	Lung meridian points	The original condition	Asbestos A6-45	Asbestos A6-45M	Crocidolite (SOUTH AFRICA)
one	Alveoli	13	13	7	five
2	Mediastinal plexus CTI	0	4	one	28
3		0	2	7	45
4	Bronchioles	0	twenty	eleven	23
five	Pleura	13	2	five	nine
6	Bronchi	10	nine	0	26
7	Bronchial plexus	0	eight	0	fifteen
eight	Trachea	13	nine	0	one
nine	Larynx	4	2	one	0
10	Laryngopharynx	eleven	five	4	10
Σ - sum deviations		64	74	36	162

From the results of testing A6-45 and A6-45M asbestos along the lung meridian cn rav follows that A6-45 asbestos increases the integral deviation from the physiological norm corridor from 29 to 45 units, and A6-45M asbestos reduces the integral deviation from the physiological norm from 29 to 14 units. Along the lung meridian on the left for asbestos A6-45 - an increase from 64 to 74 units, and for A6-45M - a decrease from 64 to 36 units.

From these results, it can be concluded that asbestos A6-45M not only does not worsen the parameters of the lung meridian points, but also allows us to make an assumption about some predicted therapeutic effect on the respiratory system (Tables 5, 6) and the associated improvement in the energy balance Yin Yang.

In order to test the therapeutic effect, modified chrysotile asbestos was used for exacerbation of chronic prostatitis (frequent urge and difficulty in urinating, pulling pain in the perineum). Preliminary electropuncture diagnostics with prediction of the effect of asbestos were carried out. This has been clinically confirmed. After taking 1 tablespoon of asbestos pulp by mouth, the following was noted: 8 hours after taking this substance, an unusual lightness appeared

urination, complete disappearance of pulling pain in the perineum and the disappearance of external hemorrhoids. This effect of ease of urination lasted about 3 weeks (tested by one of the authors). A pronounced choleric effect was noted with a decrease in severity in the right hypochondrium against the background of a laxative effect.

After this positive experience, modified asbestos was used for chronic 3-year neurodermatitis of the elbows, accompanied by severe itching with the appearance of rough skin and scratching in patient P.Yu. 8 years. A pronounced therapeutic effect was noted with a single application of modified asbestos pulp at night. After removing the dressing, the skin of the cubital fossa cleared, became unnaturally white, smooth and tender, the itching did not bother. After a week, the restoration of skin color to natural was observed. At follow-up for 3 years, there was no recurrence of neurodermatitis symptoms.

#### Conclusions:

1. The method for assessing the balance of Yin-Yang energies in the interpretation of R. Voll is applicable not only for testing of pharmacological preparations in order to identify indications and contraindications, but also for the ecometric assessment of the aggressiveness of silicates and other materials.
2. R. Voll's method allows for a more subtle differentiation of the aggressiveness of silicates through the assessment energies Yin - Yang, assigning them a quantitative characteristic. Within III-IV hazard classes of silicates, it is possible to create a 12-point scale of gradations at 6 points per class. This makes it possible to assess the tendency of changes in the aggressiveness of silicates in the processes of their technological treatments.
3. The creation of a 12-point scale within the III-IV class requires the use of calibration substances, whose bio-properties are well known. In this work, the following materials were used: wood, clay, river sand, asbestos A6-45 ("Uralasbest").
4. Crocidolite (blue asbestos) is much more aggressive than chrysotile asbestos (white asbestos).
5. The work shows that the aggressiveness of the sand after grinding increases, which is well known, and the method of R. Voll confirms this.
6. Changes in the bio-properties of sand and asbestos in the positive direction with a tendency of transition from from one class to another, to a lower hazard class after modifying treatment.
7. Ecometry by the method of balance of Yin - Yang energies in R. Voll's interpretation can serve as a technical means that complements the method of classical clinical and morphological research, which is the benchmark in ecometry.

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