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### **Fundamentals of environmental safety in the content of training future artists of traditional applied art**

**Abstract.** The article deals with topical issues related to environmental safety in the context of training future artists of traditional applied art. The article reveals various aspects of environmental safety, substantiates the necessity of an integrated approach that forms students' holistic worldview and understanding of their role in preserving the environment through art. The model of training future artists of traditional applied art, including the basics of environmental safety is proposed. The interrelation of health-saving technologies and training of future artists of traditional applied art in the aspect of ecological safety is revealed. The problem of necessity of studying of the given scientific direction, at preparation of future artists of traditional applied art is investigated. The place and importance of the basics of ecological culture and life safety in educational programs is determined. The importance of awareness of the impact of traditional materials on the environment and the need to implement alternative innovative solutions that minimize risks to the health of artists and the ecosystem as a whole is substantiated.

**Keywords:** environmental education, environmental culture, environmental safety, traditional applied art, educational space, health-saving technologies, environmental risk.

**Introduction.** The relevance of the problem of ecological safety in educational environment is confirmed by the demand from state and society for highly qualified specialists who possess competencies in their chosen field while being socially responsible with stable value orientations towards nature, culture, society, work, life and health. This is substantiated by the Constitution of the Russian Federation, the law “On education”, presidential decree No. 309 dated May 7, 2024 “On national development goals of the Russian Federation for the period up to 2030 and prospects until 2036”, presidential decree No. 176 dated April 19, 2017 “On the strategy of ecological security of the Russian Federation for the period up to 2025”, federal project “Development of human capital in the interests of regions, areas and research and development sector” and federal law No. 7-FZ “On environmental protection”.

Article 42 of the Constitution of the Russian Federation establishes every citizen's right “to a favorable environment, reliable information about its condition and compensation for damage caused to his/her health or property by an environmental offense”, as well as the powers of the Government of the Russian

Federation to create conditions for developing citizens' environmental education system and fostering ecological culture [2].

The aim of this study is to identify a set of necessary and sufficient conditions for forming the foundations of ecological culture and ecological security among students—future artists specializing in traditional art crafts. Ecological culture of individuals and society is viewed as one aspect of national security that ensures a healthy and favorable learning and living environment, minimizing exposure to harmful and hazardous substances used in the educational process and their impact on health, which necessitates seeking effective solutions to reduce toxic influences.

The subject of research is the analysis of indicators and criteria for ecological safety within higher education institutions providing training for future artists in Russia's traditional art crafts domain.

The theoretical significance of this work lies in studying the chemical composition of materials used in creating works of traditional art crafts and their properties. Practical value consists in formulating recommendations for educational institutions aimed at establishing a safe educational environment. This raised issue can serve as a basis for revising existing academic standards and introducing new regulations ensuring the health of both students and teachers.

### **Results and discussion**

The fundamentals of ecological safety in educating future artists in traditional applied arts encompass several key aspects:

- familiarization with the ecological qualities of materials, including information on what types of materials are utilized in traditional applied arts (such as wood, textiles, ceramics), their environmental impacts and the application of environmentally friendly alternatives (recycled or natural materials);
- mastering technologies that minimize negative environmental impact, such as using non-toxic paints and glues, along with safe methods for material processing;
- understanding principles of sustainable development, including ideas on how to create artwork that is not only aesthetically pleasing but also ecologically safe. This involves utilizing materials and techniques that do not require substantial resources;
- ecological responsibility, promoting the development of rational resource management skills among learners. This includes participation in projects focused on restoring natural ecosystems or organizing exhibitions dedicated to environmental themes;
- cultivation of critical thinking, enabling students to analyze their own works regarding their environmental impact, including lifespan and disposal of art pieces;
- integration of environmental topics into curricula to raise awareness of the importance of ecological safety.

Considering the metasubject nature of issues related to ecological safety, the content of mandatory subjects in the curriculum — such as "Life safety", "Academic drawing", "Decorative drawing", "Academic painting" and "Plastic anatomy" — is supplemented with information on the essence of ecology, ecological laws and principles. As a result, knowledge is formed concerning human-safe muscle

movements and bioecologically accurate depiction of moving or statically posed humans and animals.

Students become acquainted with the influence of individual chemicals found in oils and paints as forms of pollution affecting both the artist's health and the environment, as well as with methods of protection against chemical contamination [1, pp. 46–52].

Thus, the fundamentals of ecological safety in teaching future artists of traditional applied arts should cover both theoretical and practical aspects, shaping a comprehensive understanding of their role in preserving the environment.

In the process of training future artists in traditional applied arts, studying environmental safety issues is linked to several contradictions between:

- traditional and modern materials: on the one hand, artists are trained to use substances that may be less eco-friendly (synthetic dyes or chemical adhesives). On the other hand, there is a need to introduce sustainable and environmentally safe alternatives, which might conflict with traditional methods;
- freedom of creative activity (creativity) and limitations imposed by ecological risks;
- commercial interests and ecological responsibility, where artists may face pressure from contemporary markets to produce works that sell better but are not environmentally sound;
- educational program content and real-world practice, when curricula provide theoretical knowledge about ecological safety, yet these insights may remain unapplied in actual practice.

These contradictions highlight the necessity for a holistic approach to education that integrates both traditional and contemporary elements of ecological safety in art. To achieve this, it is essential to define the place and significance of health-preserving technologies based on the following principles:

- use of harmless and non-toxic materials to minimize health risks for both artists and viewers (use of natural paints, glues, etc.);
- employment of safe working methods that reduce physical strain and injury risks (personal protective equipment and ergonomic workspace design);
- fostering ecological sustainability through implementation of clean technologies that contribute to safer and healthier environments;
- preservation of psychological well-being supported by working with eco-friendly materials and in a healthy environment, contributing to increased satisfaction from the creative process.

Therefore, integrating health-saving technologies into the preparation of future artists in traditional applied arts not only contributes to their professional growth but also cultivates a more responsible and mindful attitude toward the environment and personal health.

One mechanism for developing ecological culture, enhancing environmental education and nurturing ecological values in line with the Fundamentals of state policy in the field of environmental development of the Russian Federation until 2030 is incorporating issues related to the formation of ecological culture,

environmental education and upbringing into state, federal and regional programs [7, sub-point "ж" of point 20].

In the National security strategy of the Russian Federation approved by presidential decree No. 400 of 2021, one of the strategic national priorities in securing and protecting the national interests of the Russian Federation is ecological safety (sub-point 7 of point 26), aimed at addressing the task of improving the level of environmental education and ecological culture of students and enhancing the qualifications of future artists in traditional art crafts [8, sub-point 17 of point 83].

However, the federal state educational standards include competencies indirectly related to ecological safety, specifically:

- in the field of study: 54.03.02 decorative applied art and folk crafts, competence "YK-8" is developed: "To create and maintain safe living conditions in everyday life and professional activities for preservation of the natural environment, ensuring sustainable societal development, including during threats and occurrences of emergency situations and military conflicts" [9].

- for the specialty 54.02.02 decorative applied art and folk crafts (by type), competencies "OK 07": "Contribute to environmental conservation, resource saving, apply knowledge about climate change, lean production principles, act effectively in emergencies" and "ТК 2.6": "Ensure compliance with rules and norms of occupational safety in professional activities" are developed [10].

These competencies enable the acquisition of skills in obtaining information, utilization of information technology tools, adherence to technical safety requirements, legal and ethical norms and information security standards. They foster an understanding of ecological culture, the ability to predict adverse consequences of activities and prevent them [6, p. 145].

A model for training future artists in traditional art crafts from the perspective of ecological safety could incorporate several key components (Fig. 1). It would help prepare conscientious and responsible artists capable of combining their creative abilities with care for nature and their own health, taking into account the effects of toxic materials commonly used in artistic practices

Materials such as paints, solvents, varnishes, glues, primers and plaster used in the educational process contain chemical compounds that, upon prolonged contact, can cause chronic diseases, allergic reactions and other health issues [4]. Each of the aforementioned materials contains potentially toxic components posing a threat to students' health and the environment.

Figure 2 illustrates the results of data systematization of these materials according to their purpose and toxicity composition.

Short-term consequences include headaches, nausea, eye irritation, skin irritation and respiratory tract irritation [3]. Long-term exposure to toxic materials can lead to respiratory illnesses such as chronic bronchitis and allergic asthma; skin allergies ranging to contact dermatitis; neurological disorders due to solvent accumulation in the body, damaging the central nervous system; increased risk of cancer associated with prolonged exposure to carcinogenic components (lead, formaldehyde, phenol); weakened immune system resulting from chronic exposure to toxic fumes and dust.



Fig. 1. Model of training future artists in traditional applied arts through the prism of foundations of ecological culture and safety

Special attention should be given to wastes generated during the work process: leftover paint, fabrics, threads, metal shavings, etc., which require proper disposal to avoid environmental pollution. Jewelry making employs certain hazardous substances (mercury and acidic solutions) that can enter the atmosphere and water bodies if precautions are not taken.

Table 1 provides assessments of the ecological burden on students during the execution of different tasks in workshops for decorative painting, jewelry making, fabric painting and artistic embroidery, reflecting the environmental impact aspects.

Particular attention in reducing toxic load deserves gradual transition to environmentally safe analogs of traditional materials: using acrylic paints instead of oil ones, water-emulsion lacquers, as well as solvents based on natural ingredients. To ensure compliance with safety standards, it is necessary to establish a monitoring system for working conditions in studios. This will significantly reduce health risks

for students and faculty members of art universities, improve the quality of education and prepare students for safe and professional work with materials in their future careers.

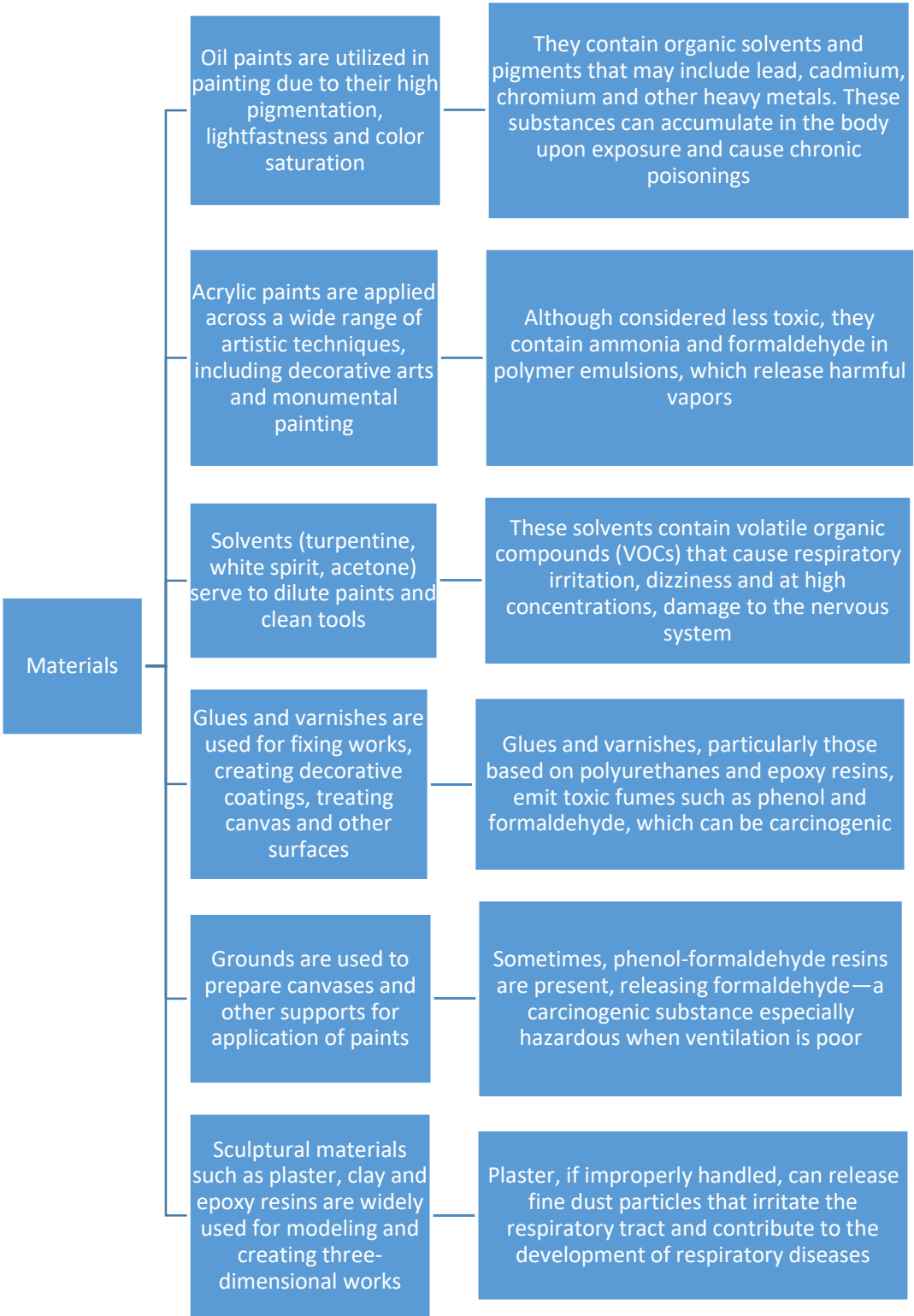


Fig. 2. Results of analysis of purpose and toxicity of materials

Table 1.

Ecological burden on a student – future artist of traditional applied arts

<i>Type of activity</i>	<i>Ecological burden</i>	<i>Source of contamination/impact</i>	<i>Effect on the student</i>
<b><i>Decorative painting</i></b>	Emissions of volatile organic compounds (VOCs)	Dyes, varnishes, paints, solvents (e.g., acetone)	Inhalation of toxic vapors, allergic reactions to chemicals
	Water and soil contamination	Paint, solvent and varnish waste	Impact of chemical substances due to improper waste management
<b><i>Jewelry making</i></b>	Use of toxic chemical substances	Metal melting, use of acids and mercury, metallic waste	Inhaling smoke, exposure to toxic chemicals during metal treatment
	High temperatures	Energy consumption for metal smelting and processing	Health risks associated with high temperatures and chemical exposure
<b><i>Fabric painting</i></b>	Application of synthetic dyes and chemicals	Fabrics, dyes, solvents	Potential exposure to toxins affecting skin, eyes and respiratory system
	Material disposal	Waste from dyes and fabrics	Skin moistening, respiratory tract irritation
<b><i>Artistic embroidery</i></b>	Pollution from thread, fabric and needle waste	Thread scraps, fabric remnants, plastic elements (e.g., beads)	Risks from improper handling of needles, possible micro-injuries
	Use of synthetic threads and fabrics	Synthetic materials and waste from their production	Health impact through contact with synthetic substances

### Conclusion

The research conducted within the framework of this work demonstrates the necessity of a comprehensive approach to solving the problem of ecological safety at all stages of the educational process: from selecting materials to ensuring adequate safety measures in educational studios.

Underestimation of the importance of environmental education, lack of an efficient public-state governance mechanism for environmental education and deteriorating environmental situation gave rise to the necessity of forming students' ecological culture and mindset aligned with their educational direction and profile, fostering a worldview grounded in scientific knowledge about ecological safety [11].

One of the objectives of ecological safety as an interdisciplinary science is to establish interconnections between natural sciences, general art and professional disciplines as a leading condition for achieving personal, metasubject and subject-specific outcomes, facilitating the comprehensive development of a creative personality [5].

## References

1. Aleksandrova N. M. Priority` razvitiya e`kologicheskogo obrazovaniya v xudozhestvennom vuze / N. M. Aleksandrova. – Tekst : e`lektronny`j // E`kopoe`zis: e`ko-gumanitarny`e teoriya i praktika. – Sankt-Peterburg, 2020. – № 1 (1). – S. 46-53. – DOI 10.24412/2713-1831-2020-1-46-53. – URL: <http://ecopoiesis.ru> (data obrashheniya: 02.05.2025).
2. Konstituciya Rossijskoj Federacii. – Tekst : e`lektronny`j // Konsorcium KODEKS : e`lektronny`j fond normativno-texnicheskoj i normativno-pravovoj informacii. – URL: <https://docs.cntd.ru/document/9004937> (data obrashheniya: 20.03.2025).
3. Kosobrinova S. A. Toksikologicheskij analiz razlichny`x ob`ektov i materialov / S. A. Kosobrinova, G. I. Bagilli, K. M. Abbazova. – Tekst : neposredstvenny`j // Bezopasnost` gorodskoj sredy` : materialy` VII Mezhdunarodnoj nauchno-prakticheskoy konferencii. – Omsk : Omskij gosudarstvenny`j texnicheskij universitet, 2020. – S. 386-391. – EDN: ZXVBUJ
4. Lakarova E. V. Disiplina «Bezopasnost` zhiznedejatel`nosti» v sovremennom gumanitarnom obrazovanii / E. V. Lakarova, I. K. Drakina. – Tekst: e`lektronny`j // Tradicionnoe prikladnoe iskusstvo i obrazovanie: e`lektronny`j zhurnal. – Sankt-Peterburg, 2024. – № 3 (50). – S. 118-126. – DOI 10.24412/2619-1504-2024-3-118-126. – URL: [https://www.dpio.ru/stat/2024\\_3/2024\\_03-13.pdf](https://www.dpio.ru/stat/2024_3/2024_03-13.pdf) (data obrashheniya: 20.03.2025).
5. Lakarova E. V. E`kologizaciya poznaniya v dekorativno-prikladnom iskusstve / E. V. Lakarova. – Tekst: e`lektronny`j // Tradicionnoe prikladnoe iskusstvo i obrazovanie: e`lektronny`j zhurnal. – Sankt-Peterburg, 2014. – № 2 (9). – S. 29-39. – URL: [https://docs.yandex.ru/docs/view?url=ya-browser%3A%2F%2F4DT1uXEPRrJRXIUfoewruJHNU5Y1\\_jpApO6-P930GWIbelpmcnhBQasjCDRYbo56EvOCCpKynl8Amp7DGMafgCpDSuI31scTdRxzHmVSxO4mKVLqsbKCQIYrrEO34Wy1\\_U2ZC90OBV69YEH9IDF\\_7g%3D%3D%3Fsign%3DzsQN1M8eATo9pmLzsfJS-JQoIa2plOE\\_FTKHnwwGz-Y%3D&name=Lakarova.doc&nosw=1](https://docs.yandex.ru/docs/view?url=ya-browser%3A%2F%2F4DT1uXEPRrJRXIUfoewruJHNU5Y1_jpApO6-P930GWIbelpmcnhBQasjCDRYbo56EvOCCpKynl8Amp7DGMafgCpDSuI31scTdRxzHmVSxO4mKVLqsbKCQIYrrEO34Wy1_U2ZC90OBV69YEH9IDF_7g%3D%3D%3Fsign%3DzsQN1M8eATo9pmLzsfJS-JQoIa2plOE_FTKHnwwGz-Y%3D&name=Lakarova.doc&nosw=1) (data obrashheniya: 20.04.2025).
6. Rossijskaya Federaciya. Prezident. Osnovy` gosudarstvennoj politiki v oblasti e`kologicheskogo razvitiya Rossii na period do 2030 goda : utverzhdeny` 30 aprelya 2012 goda. – Tekst : e`lektronny`j // Konsorcium KODEKS : e`lektronny`j fond normativno-texnicheskoj i normativno-pravovoj informacii. – URL: <https://docs.cntd.ru/document/902369004> (data obrashheniya: 20.03.2025).
7. Professional`naya pedagogika: uchebnik dlya studentov, obuchayushhixsya po pedagogicheskim special`nostyam i napravleniyam / pod redakciej S. Ya. Baty`sheva, A. M. Novikova. – Izdanie 3-e, pererabotannoe. – Moskva: E`GVES, 2009. – 456 s. – Tekst: neposredstvenny`j.
8. Rossijskaya Federaciya. Prezident. O Strategii e`kologicheskoy bezopasnosti Rossijskoj Federacii na period do 2025 goda : Ukaz Prezidenta Rossijskoj Federacii ot 19 aprelya 2017 goda № 176. – Tekst : e`lektronny`j // – URL: <http://pravo.gov.ru/proxy/ips/?docbody=&nd=102430636&rdk=&firstDoc=1&lastDoc=1> (data obrashheniya: 20.03.2025).



9. Rossijskaya Federaciya. Ministerstvo nauki i vy'sshego obrazovaniya. Ob utverzhdenii federal'nogo gosudarstvennogo obrazovatel'nogo standarta vy'sshego obrazovaniya – bakalavriat po napravleniyu podgotovki 54.03.02 dekorativno-prikladnoe iskusstvo i narodny'e promy'sly' : prikaz Ministerstva nauki i vy'sshego obrazovaniya Rossijskoj Federacii ot 13 avgusta 2020 g. № 1010 s izmeneniyami i dopolneniyami ot 26 noyabrya 2020. – Tekst : e'lektronny'j // Konsul'tantPlyus : spravoch'naya pravovaya sistema. — URL: [https://www.miep.edu.ru/sveden/files/FGOS\\_54.03.02\\_DPI\\_3.pdf](https://www.miep.edu.ru/sveden/files/FGOS_54.03.02_DPI_3.pdf) (data obrashheniya: 20.03.2025).

10. Rossijskaya Federaciya. Ministerstvo nauki i vy'sshego obrazovaniya. Ob utverzhdenii Federal'nogo gosudarstvennogo obrazovatel'nogo standarta srednego professional'nogo obrazovaniya po special'nosti 54.02.02 Dekorativno-prikladnoe iskusstvo i narodny'e promy'sly' (po vidam) : prikaz ot 27 oktyabrya 2014 g. № 1389. – Tekst : e'lektronny'j // FGOS : obrazovatel'naya informacionnaya sistema. — URL: <https://fgos.ru/fgos/fgos-54-02-02-dekorativno-prikladnoe-iskusstvo-i-narodnye-promysly-po-vidam-1389/> (data obrashheniya: 20.03.2025).

11. Rossijskaya Federaciya. Pravitel'stvo. [Ob odobrenii E'kologicheskoy doktriny' Rossijskoj Federacii] : rasporyazhenie ot 31 avgusta 2002 goda № 1225-r. – Tekst : e'lektronny'j // Konsorcium KODEKS : e'lektronny'j fond normativno-texnicheskoy i normativno-pravovoj informacii. — URL: <https://docs.cntd.ru/document/901826347?ysclid=mbho3ulg74415266778> (data obrashheniya: 15.02.2025).