

## IDENTIFICATION AND CLASSIFICATION OF WASTE WITHIN TOURIST DESTINATIONS

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**Purpose.** To analyze the existing legislation and publications on the concept and classification of waste and to identify the gaps related to tourist destinations waste. **Methodology.** We have justified the relevance of the environmental research of tourist destination areas. We have analyzed the European and Ukrainian legislation on waste management and recent publications on environmental aspects of tourism, namely tourist destinations waste. We have justified that environmental problem of waste management within tourist destinations is relevant and not enough studied in Ukraine. We have studied the concept of waste within tourist destinations and its classification in the context of sustainable tourism development. We have used the literary and analytical method, method of system analysis, comparison method and others for the study. **Results.** We have determined the absence of the concept of municipal solid waste in Ukrainian legislation. We have offered the classification of municipal solid waste within tourist destinations. **Originality.** We have studied the concept and types of waste in the context of tourist destinations development and offered the classification of municipal solid waste within tourist destinations for the first time. **Practical value.** We have offered to define the concept of municipal solid waste and to implement its offered classification for the development of effective waste management methods and ecological safety of the tourist destinations. *References 12, figures 1, tables 1.*

**Key words:** ecological safety, waste, municipal solid waste, waste management methods, tourist destination.

## ІДЕНТИФІКАЦІЯ ТА КЛАСИФІКАЦІЯ ВІДХОДІВ ТУРИСТИЧНИХ ДЕСТИНАЦІЙ

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Обґрунтовано актуальність екологічних досліджень територій туристичних дестинацій. Проведено аналіз європейського та українського законодавства у галузі поводження з відходами, публікацій останніх років з питань екологічних аспектів туристичної діяльності, а саме відходів туристичних дестинацій. Обґрунтовано екологічну проблему поводження з відходами туристичних дестинацій як актуальну та недостатньо розроблену в Україні. Розглянуто поняття відходів туристичних дестинацій та їх класифікацію у контексті збалансованого розвитку туризму. Для проведення досліджень було використано літературно-аналітичний метод, метод системного аналізу, метод порівняння та інші. Запропоновано класифікацію твердих побутових відходів туристичних дестинацій. Пропонується визначити поняття твердих побутових відходів та упровадити запропоновану класифікацію для розробки ефективних методів поводження з відходами та забезпечення екологічної безпеки туристичних дестинацій.

**Ключові слова:** екологічна безпека, відходи, тверді побутові відходи, методи поводження з відходами, туристична дестинація.

**PROBLEM STATEMENT.** Nowadays tourism is a successful sector of the world's economy which is developing quite steadily. Its development has significant positive economic and social impacts. However, its negative impact on the environment is almost completely ignored. The rapid development of the tourism industry, tourism infrastructure and respectively increase in tourist flows have a negative impact on water resources, soils, flora and fauna, and so on. The main areas of tourism environmental impact are energy, water and waste [1]. Waste is the least studied field of this impact. Therefore, the relevant task of environmental studies within tourist destinations is to study the concept and classification of waste for its further effective management.

**EXPERIMENTAL PART AND RESULTS OBTAINED.** Waste is an important anthropogenic factor of environmental changes, especially waste within popular

tourist destinations. In general, there is no consensus on the definition of "waste" in the legislation and among the scientists. This complicates its understanding and leads to differences in the approaches to its management methods.

In Ukraine there are several legislative acts which provide the definition of waste.

According to the Law "On Waste" in Ukraine, wastes mean any substances, materials and objects that were generated in the process of production or consumption, as well as goods (products) that wholly or partially have lost their consumer properties and have no further use at the site of their generation or exposure and from which the owner gets, intends to or must get rid of by utilization or disposal [2].

Ukrainian State Classifier of Waste "DK 005-96" which provides information support in the solving of the range of issues in government waste management includes two definitions of this term that in comparison

to the previous ones are broader and include the environmental aspect [3]:

- Wastes mean any substances and objects generated in the process of production and human life, as a result of technogenic or natural disasters, that have no further use at the site of their generation and have to be removed or recycled in order to protect the environment and human health, or have to become raw material and energy resources in order to be used in economic activity again, and services related to the waste;

- Wastes are any substances, materials and objects that were generated in the process of human activity and have no further use at the site of their generation or exposure and from which the owner gets, intends to or must get rid of by utilization or disposal.

There is also a similar definition in the State Standard DSTU 2195-99 "Nature protection. Waste treatment". Wastes are any substances, materials and objects that were generated in the process of human activity and have no further use at the site of their generation or exposure and from which the owner gets, intends to or must get rid of by utilization or disposal [4].

Law of Ukraine "On alternative types of liquid and gas fuel" provides the definition that focuses on waste as an alternative type of fuel. Wastes are slag and wastes from industry, agriculture, municipal and other establishments that may be the source or raw material for extraction or production of alternative types of fuel [5].

Ukraine as a modern constitutional state has chosen as one of the directions of its development the orientation on the European Union by harmonizing modern Ukrainian legislation to European standards, adaptation of its legal acts, including the ones on waste. Therefore, it is necessary to study and take into account the experience of European countries in the field of waste management.

The main regulatory EU document in the field of waste treatment and management which defines the legal framework and basic principles of its treatment is the Directive 75/442/EEC "On Waste". It introduces the common definitions of terms and concepts of "waste", "recovery", etc. According to it wastes mean every substance or object which the owner gets rid of, wants to get rid of or has to get rid of according to current legislation". This directive also defines 16 categories of waste that form a single European waste catalogue (decision 2000/532/ EWG) that is periodically reviewed and updated [6].

According to Basel Convention wastes are substances or objects which are deleted, are intended to removing or subjects to removing in accordance with national legislation positions" [7].

European Union Waste Framework Directive includes broader definition of waste. Waste is any substance or object which the holder discards or intends or is required to discard [7].

So, almost all the definitions of waste both in Ukrainian and in European legislation focus on the legal side of waste and some of them have no environmental aspect as for example in the Ukrainian Law "On

Waste". This aspect is particularly important for tourist destinations because their ecological safety is an attraction factor for tourists. Moreover, the absence of this aspect complicates the choice of environmentally friendly waste treatment methods.

Ukrainian scientists N.O. Korniakova [8], V. Yureskul, O. Bodnar, H. Budnik, K.V. Savytska, T.M. Dovha and others have studied the concept of waste and its problems.

N.O. Korniakova noted that the term "waste" is multityped and can be considered on the basis of different approaches, considering the legal basis of their management, physical condition and characteristics, environmental and economic characteristics and so on. Clear understanding of the studied concept can be achieved by examining all the inherent features and their contradictions [8]. This principle is particularly important in the process of defining waste in tourism and its classification.

The classification of waste is very important for the effective waste management. As the nature of its characteristics requires different management methods, each type of waste should be assessed individually.

H.T. Vasiukova and O.I. Grosheva divide waste into two main groups [9]:

- production waste (industrial waste);
- consumption waste.

Production wastes include materials, substances, products generated in the process of production, work or service provision and have no further use at the particular enterprise (organization) or those that have wholly or partially lost their consumer properties.

Consumption wastes or municipal solid wastes include products, materials and substances which have wholly or partially lost their consumer properties in the process of mass or personal consumption. This type of waste is more relevant in tourism; that is why let us consider it in detail.

Ukrainian legislation does not provide clear classification characteristics of waste; it only singles out some certain types of waste. However, it should be noted that all consumption wastes are divided into three classes: actual municipal waste, used household appliances and waste from the repair of residential areas [10].

According to the Ukrainian State Classifier of Waste "DK 005-96" wastes include [3]:

- remainings of raw materials, semifinished products, etc. generated in the process of production or work and have wholly or partially lost their consumer properties (production waste);
- overburden and related rock extracted in the process of mineral deposits development;
- remaining products of enrichment and other primary processing of raw materials (sludge, dust, screenings, etc.);
- newly formed substances and mixtures generated in thermal, chemical and other processes and that are not the purpose of this production (slag, ash, waste residue, other solid and pasty like formations, liquids and aerosols);

- remaining products of agricultural production (including livestock), forestry and logging;
- defective, substandard products of all economic activities or products that are contaminated with hazardous substances and are not suitable for using;
- unidentified products, use (operation) or consumption of which may cause unintended consequences (including chemical fertilizers, pesticides and other substances);
- spoiled (damaged) and non-repairable or used, physically and morally worn-out products and materials that have lost their consumer properties (consumption waste);
- remains of food, household items, packaging materials, etc. (municipal waste);
- sediments of purifying industrial, municipal and other public services facilities;
- remains from the medical and veterinary care, biomedical, chemical and pharmaceutical industry, pharmacy;
- remaining products of all other activity types of enterprises, institutions, organizations and public;
- material objects and substances whose radionuclide activity or radioactive contamination exceeds the limits set by current standards if the use of these objects and substances is not expected (radioactive waste).

A.K. Zapolskiy and A.I. Saliuk classify waste according to the following features: the place of generation, possibility of recycling, state of aggregation, toxicity [11].

According to the place of generation wastes are divided into:

- industrial – remainings of raw materials, semifinished products generated in the process of production and that have partially or wholly lost their original properties;
- municipal – solid and liquid wastes that are not utilized in everyday life and that form as the result of human activity and use of household items;
- agricultural – wastes generated in agricultural production.

According to the possibility of recycling all wastes can be divided into secondary material resources that are processed or which processing is planned, and wastes recycling of which is not feasible at this stage of economic development.

According to the state of aggregation wastes are divided into:

- solid (gravel, sand, slag, etc.);
- liquid (solutions, emulsions, suspensions, etc.);
- gaseous (gases and their mixtures, water steam, steam-gas mixture).

According to the toxicity wastes are classified depending on the danger of poisoning:

- extremely dangerous;
- highly dangerous;
- moderately dangerous;
- low dangerous.

The most common type of waste in tourism is municipal waste, namely municipal solid waste. It

should be noted that there is no term of municipal solid waste in Ukrainian legislation. The interpretation of this term can be found in the “Rules of providing services of collection and transportation of solid and liquid municipal waste”. However, this document is invalid now.

Therefore, the concepts of municipal and solid waste should be studied in detail.

In the Law of Ukraine “On Waste” the term “solid waste” is defined as the remainings of substances, materials, objects, wares, goods, products that cannot be used further for their purpose [2].

This law also includes the term “municipal waste”. According to it municipal wastes are wastes generated during human life and activity in residential and nonresidential houses (solid, bulk, repair-related, liquid wastes except the ones related to production activity of enterprises) and are not used at the site of their accumulation.

H.T. Vasiukova and O.I. Grosheva define municipal waste as waste generated in the process of human activity and that people throw away as unwanted or useless. In particular, municipal solid waste include paperboard, newsprint, packaging or consumer paper, various packaging (wooden, glass, metal) that aren't used or have lost their consumer properties, objects and products of wood, metal, leather, glass, plastic, textiles and other materials, broken or outdated appliances, garbage, agricultural and municipal food waste. [9]

Municipal waste (or consumption waste) can be classified differently.

T.M. Dovha suggested the classification of waste on the following criteria [10]:

- state of aggregation (solid, liquid);
- volume (large, small);
- level of damage to the environment (safe, dangerous);
- sphere of generation (agricultural, construction (repairs), garden, etc.);
- sphere of services (medical sphere, guesthouse, hotel and restaurant business, military);
- source of generation (residential buildings, office buildings).

According to the Ukrainian State Classifier of Waste “DK 005-96” municipal waste belongs to the section “Waste from services” and is classified by the number 7720.3.1.01 “Mixed municipal waste including waste from garbage bins” [3]. However, this document does not divide waste into industrial and municipal; municipal waste is considered as an element of the industrial one.

All these definitions and classifications in Ukraine are general and do not pay attention to the peculiarities of the tourism industry. Therefore, the international experience should be studied. The manual on waste and water resources management within tourist destinations which has been developed as a part of the United Nations Environment Programme provides three categories of solid waste: hazardous, biodegradable and non-biodegradable, and combustible and non-combustible waste [12].

Hazardous waste contains harmful chemicals and

produces harmful by-products when burned or placed in a landfill site. Common hazardous wastes at tourism facilities include paints, cleaners, oils, batteries and pesticides, all of which can have a severe impact on the environment if left untreated. Hazardous waste requires special treatment procedures before disposal and is not appropriate for ordinary on-site treatment, placement in open landfill sites or burned in an uncontrolled manner. While some instances hazardous waste disposal is regulated (fines are imposed for improper practices); however, in many countries, especially in more remote areas, there is often little government regulation or inspection of hazardous waste treatment.

Biodegradable waste contains organic substances which can be broken down over time, treated and recycled into useful by-products such as biogas and compost; non-biodegradable waste (textiles, chemicals, rubber and plastics) do not. Biodegradation time depends on the type and nature of the substance and can range from a few weeks to many years.

Combustible waste such as paper, used oils, rubber and leather, has a high heat value, burns easily and releases heat energy when combusted. Non-combustible waste such as glass, aluminum and most organic waste (e.g. food scraps and garden trimmings) has a lower heat value and cannot be easily burned. So, each type of waste should be assessed individually since the nature of its characteristics leads to different types of waste management methods [12].

Analysis of the literary sources has shown that there is no concept of the most common type of waste within tourist destinations, namely municipal solid waste, and therefore its classification in Ukrainian legislation. Tourist industry is also not considered as one that can cause damage to the environment. However, due to the rapid development of tourism and recreation industry in Ukrainian Carpathians and increase in tourist flows, and therefore increasing in the amount of waste, this problem is becoming relevant and needs to be solved. Among all analyzed classifications only the classification of T.M. Dovha distinguishes the waste from the hotel and restaurant business as one of essential ones. However, even this classification does not consider waste from tourist destinations as a complex problem. Therefore, we offer to identify this type of waste as a separate one, especially for popular tourist destinations. Main examples of municipal solid waste in the tourism industry are presented in Table 1 [12].

Table 1 – Examples of municipal solid waste generated by tourism industry

Accommodation facilities (hotels, guesthouses)	<ul style="list-style-type: none"> <li>– newspapers and magazines;</li> <li>– cleansing agent containers used by housekeeping and laundry services;</li> <li>– flowers in guestrooms and public areas;</li> <li>– plastic shampoo and cosmetic soap bottles;</li> <li>– old towels, linens, bed sheets and furniture;</li> <li>– paint and varnishes, used</li> </ul>
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	fittings, fixtures and plumbing supplies, refrigerators.
Food facilities	<ul style="list-style-type: none"> <li>– empty cans, bottles, tins and glass;</li> <li>– food;</li> <li>– small non-refillable product containers (sugar, salt, pepper, flour and cream);</li> <li>– paper serviettes, coasters, straws, toothpicks and cocktail napkins;</li> <li>– used aprons, kitchen towels and napkins.</li> </ul>
Open spaces and grounds	<ul style="list-style-type: none"> <li>– plant trimmings;</li> <li>– empty pesticide/insecticide bottles and fertilizer packs, pesticides, insecticides and fertilizer products (which are often hazardous).</li> </ul>
Administrative and office facilities (main office of tourist facility, reception desk)	<ul style="list-style-type: none"> <li>– paper and envelopes;</li> <li>– travel pamphlets and brochures which are often quickly discarded by tourists.</li> </ul>

For effective waste management, reducing of the load on municipal landfills, improvement of the ecological situation, we offer to classify municipal solid wastes within tourist destinations the following way (Fig. 1):

- according to the sphere of generation (wastes of the hotel industry, restaurant industry, open spaces, offices);
- according to the origin (organic (food waste, plant trimmings), inorganic (plastic, paper, polyethylene));
- according to the level of danger (highly dangerous, low dangerous);
- according to the morphological composition (food waste, paper waste, glass, plastic, etc.).

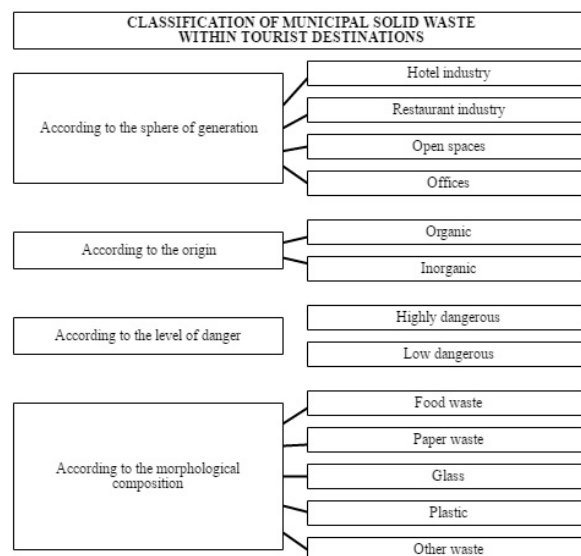


Figure 1 – Classification of municipal solid waste within tourist destinations

**CONCLUSIONS.** Nowadays tourism industry cannot be considered environmentally safe. One of the

negative effects of tourism is waste generation. Analysis of existing legislation and publications has shown that currently there is no concept of municipal solid waste that is the most relevant for tourist destinations. As there is no identification of this type of waste and therefore their classification, the classification of municipal solid waste within tourist destinations was developed. The obtained results indicate the need of definition of municipal solid waste and implementation of their classification for applying effective methods of waste management.

#### REFERENCES

1. Danilova, O.O. and Pohynaiko, I.V. (2013), "Eco-marketing trends in the hotel industry development" available at: [http://collectedpapers.com.ua/wp-content/uploads/2013/10/035\\_633\\_634\\_Danilova\\_And.pdf](http://collectedpapers.com.ua/wp-content/uploads/2013/10/035_633_634_Danilova_And.pdf) (accessed March 14, 2016)
2. (1998), Law of Ukraine "On Waste" available at: [www.zakon2.rada.gov.ua/laws/show/187/98-%D0%B2%D1%80](http://www.zakon2.rada.gov.ua/laws/show/187/98-%D0%B2%D1%80) (accessed March 21, 2016)
3. (1996), Ukrainian State Classifier of Waste "DK 005-96" available at: [www.uazakon.com/big/text78/pg1.htm](http://www.uazakon.com/big/text78/pg1.htm) (accessed March 21, 2016)
4. (1999), State Standard of Ukraine DSTU 2195-99 "Nature protection. Waste treatment" available at: [www.uk.xlibx.com/4tehnicheskije/97286-1-ohorona-prirodi-povodzhennya-vidhodami-tehnichniypasport-vidhodu-sklad-vmist-viklad-pravila-vnesennya-zmin-vid.php](http://www.uk.xlibx.com/4tehnicheskije/97286-1-ohorona-prirodi-povodzhennya-vidhodami-tehnichniypasport-vidhodu-sklad-vmist-viklad-pravila-vnesennya-zmin-vid.php) (accessed March 21, 2016)

5. (2000), Law of Ukraine "On alternative types of liquid and gas fuel" available at: <http://zakon.rada.gov.ua/go/1391-14> (accessed March 21, 2016)

6. Hetman, A.P., Shulha, M.V. and Popov, V.K. (2006), *Ekolohichne pravo Ukrainy* [Ecological law in Ukraine], Pravo, Kharkiv, Ukraine.

7. Shanina, T.P., Hubanova, O.P., Klymenko, M.O., Safranov, T.A., Korinevska, V.Iu., Bedunkova, O.O. and Volkov, A.I. *Upravlinnia ta povodzhennia z vidhodamy* [Waste management and treatment], Odesa.

8. Korniakova, N.O. (2004), The concept of waste according to the legislation of Ukraine and European Union, *Pravo Ukrainy*, no.5, pp.149-153.

9. Vasiukova, H.T. and Hrosheva, O.I. (2009), *Ekolohiia* [Ecology], Kondor, Kyiiv, Ukraine.

10. Dovha, T.M. (2011), Classification of waste as the precondition of the recycling effectiveness in Ukraine available at: <http://dspace.nbuv.gov.ua/bitstream/handle/123456789/47671/11-Dovga.pdf?sequence=1> (accessed March 21, 2016)

11. Zapolskyi, A.K. and Saliuk, A.I. (2001), *Osnovy ekolohiia* [Bases of ecology], Vyshcha shkola, Kyiiv, Ukraine.

12. (2003), A Manual for Water and Waste Management available at: [www.unep.fr/shared/publications/pdf/WEBx0015xPA-WaterWaste.pdf](http://www.unep.fr/shared/publications/pdf/WEBx0015xPA-WaterWaste.pdf) (accessed March 14, 2016)

## ИДЕНТИФИКАЦИЯ И КЛАССИФИКАЦИЯ ОТХОДОВ ТУРИСТИЧЕСКИХ ДЕСТИНАЦИЙ

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Обоснована актуальность экологических исследований территорий туристических дестинаций. Проведен анализ европейского и украинского законодательства в области обращения с отходами, публикаций последних лет по вопросам экологических аспектов туристической деятельности, а именно отходов туристических дестинаций. Обоснованно экологическую проблему обращения с отходами туристических дестинаций как актуальную и недостаточно разработанную в Украине. Рассмотрены понятия отходов туристических дестинаций и их классификация в контексте устойчивого развития туризма. Для проведения исследований были использованы литературно-аналитический метод, метод системного анализа, метод сравнения и другие. Предложена классификация твердых бытовых отходов туристических дестинаций. Предлагается определить понятие твердых бытовых отходов и внедрить предложенную классификацию для разработки эффективных методов обращения с отходами и обеспечение экологической безопасности туристических дестинаций.

**Ключевые слова:** экологическая безопасность, отходы, твердые бытовые отходы, методы обращения с отходами, туристическая дестинация.