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TRANSLATION FEATURES OF CHEMICAL TERMS

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The article is aimed at the study of features and methods of translation of chemical terminology from English into Ukrainian. Particular attention is paid to the translation of complex terms. To more accurately and correctly translate the term, it is necessary to know its word-forming and morphological structure, and semantic differences from common words.

Moreover, according to their structure, terms have been divided into simple, derivatives – suffix, prefix, suffix-prefix, complex, and phrase-terms. It can be noted that the accuracy of the translation of prefix terms often depends on a clear and accurate definition of the meaning of the prefix and knowledge of the broad meaning of the term with a particular prefix.

The formation of terms with suffixes in English is as correct and productive a way of forming terms as prefixation. An important condition for a clear and correct translation of suffix terms is knowledge of the meanings of suffixes and the main ways of translating terms with one or another suffix.

It is worth noting that a complex term is a fixed phrase with a certain meaning of the term. The vast majority of terms are prepositional attributive phrases, i.e., a phrase that has a definition, and the presented component occupies the initial position in the phrase.

The study also proved that the translation of complex terms includes two main processes – analysis and synthesis. At the stage of analysis, an important role in the translation of phrases is the translation of its various components. For this reason, the components of complex terms must be correctly defined, as both words and phrases can become a part of complex terms. It has been also important to identify the semantic relationship between the components and the main components of the phrase. The nature of these relations has determined the order and content of the translation of complex terms.

What is more, since the linguistic symbol representing the concept of a special field of science or technology, scientific and technical terms have been an important part of scientific and technical texts. Due to ambiguity, lack of translation equivalents and national differences, it is also one of the main difficulties in its translation.

ОСОБЛИВОСТІ ПЕРЕКЛАДУ ХІМІЧНИХ ТЕРМІНІВ

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Ключові слова: *термін, методи перекладу, лексичний еквівалент, перекодування, трасування, граматичні трансформації.*

Стаття спрямована на дослідження особливостей і способів перекладу хімічної термінології з англійської мови українською. Особливу увагу приділено перекладу складних термінів.

Щоб більш точно та правильно виконати переклад терміна варто знати його словотвірну й морфологічну структуру та семантичні відмінності від загальнонародних слів. Також за своєю будовою терміни розділяються на прості, похідні – суфіксальні, префіксальні, суфіксально-префіксальні, складні й терміни-словосполучення. Можна зазначити, що точність перекладу термінів-префіксів часто залежить від чіткого та правильного визначення значення префікса й знання широкого значення терміна з певним префіксом.

Утворення термінів за допомогою суфіксів є в англійській мові таким правильним і продуктивним способом утворення термінів, як і префіксація. Важливою умовою чіткого та правильного перекладу суфіксальних термінів є знання значень суфіксів і головних способів перекладу термінів з тим чи іншим суфіксом.

Варто зазначити, що складний термін – це фіксована фраза з певним значенням терміна. Більшість термінів є прийменниковими атрибутивними словосполученнями, тобто фразою, яка має визначення, і представлений компонент займає початкову позицію у фразі.

Під час дослідження також доведено, що переклад складних термінів включає два основні процеси – аналіз і синтез. На етапі аналізу важливою роллю перекладу фраз є переклад різних його компонентів. Із цієї причини компоненти складних термінів повинні бути правильно визначені, оскільки це можуть бути не тільки слова, а й фрази, що входять до складних термінів. Важливо також виявити семантичний зв'язок між компонентами й основними компонентами фрази. Характер цих відносин визначає порядок і зміст перекладу складних термінів.

Також, оскільки лінгвістичний символ, що представляє концепцію спеціальної галузі науки або техніки, науково-технічні терміни, є важливою частиною науково-технічних текстів, а через неоднозначність, відсутність еквівалентів перекладу й національні відмінності, це також одна з основних труднощів у його перекладі.

Formulation of the research problem. From time immemorial, people have used translation from one language to another. Linguists at home and abroad emphasize the role of translation in the development of culture, literature, and language itself. Due to the special status of terminology in the structure of scientific knowledge, industrial and social activities, terminology research is usually conducted in the unity of linguistic and sociological methods.

Research in the field of translation of complex chemical terminology is an important and urgent task aimed at achieving correct translations, helps to solve many problems, and accelerate the exchange of information in the field of the latest advances in chemical sciences among specialists and scientists from different countries [1, p. 68].

The purpose and objectives of the paper. The relevance of this study is due to the need to study the translation of chemical terms, as modern research on translation is still insufficient coverage of this issue.

The problem of the research is to analyze the peculiarities of the translation of chemical terms.

The purpose of the study is to investigate the peculiarities of the functioning of English complex terms in chemical texts and to determine the means of their translation.

According to the purpose, the following **objectives** were defined:

1. To analyze the current state of research of complex terminology in modern linguistics and translation studies. 2. Define the characteristics of chemical terms, their formation, and function. 3. Find out the difficulties in the process of translating terminology and possible ways to overcome these difficulties.

The object of study of this work is complex terms. **The subject** of research – the translation features of English complex terms in the field of chemistry.

Outlining the main findings of the research. The main method of translating terms is to use vocabulary to translate equivalent words. Equivalence is a constant vocabulary that corresponds to the meaning of a word. Terms equivalent to the native language play an important role in translation. They serve as reference points in the text, they rely on the disclosure of the meaning of other words and provide an opportunity to clarify the nature of the text. Therefore, you should be able to find relevant native language equivalents and expand your understanding of equivalents [2, p. 264].

A complex term is a constant phrase that is given a certain meaning of the term. The vast majority of terms are prepositional attributive phrases, i.e., such phrases where there is a definition and the denoted component, and the definition occupies the initial position in the phrase. Translation of complex terms consists of two main procedures – analytical and synthetic. An important role in the translation of phrases is played by the analytical stage – the translation of its individual components. And for this, it is necessary to correctly define the components of a complex term, because they can be not only words but also phrases that are part of a complex term [2, p. 271].

It is worth noting that the terms – a very special and very interesting layer of vocabulary. On the one hand, it is among the terms that there are the most unambiguous equivalents, on the other – among them, we find the most non-equivalent units. Terms are one of the most mobile layers of the vocabulary of a language. The composition of terminology is constantly changing due to the disappearance of some words, changes in meanings, the addition of new terms.

Many scholars, both in our country and abroad, have studied the methods of translating terms: A. Fedorov, V. Komissarov, A. Schweizer, K. Raye and others. Theoretical conclusions on these aspects of translation studies have formed the basis of many concepts.

Mastering scientific knowledge is impossible without studying the terms and their concepts. The term captures the knowledge of a special subject, phenomenon, or process of a scientific sphere or professional activity, disclosing its content using definitions by allocating necessary and sufficient features of the concept. Given the number of differential features in the semantic structure of the language unit [3; 4] you can determine the degree of the terminology of this lexical element.

The so-called "false friends" of the translator require special attention when translating scientific and technical terms, i.e., lexical units that coincide externally and even internally, but cause erroneous associations due to the presence of another meaning in them, the possibility of semantic variation of the language unit.

Today, Ukrainian chemical terminology is in a state of development. The main issue that needs to be urgently addressed is to determine the share of national and international components in the composition of terms and features of the rating of chemical terms in the Ukrainian language [5, p. 86].

Chemical terminology has been improved and systematized and has been considered and clarified in a special committee of the International Union of Theoretical and Applied Chemistry and published in relevant documents. The materials of these committees are the basis for the reproduction of agreed terms in the native language. In the Ukrainian language, most terms are established. Some of these terms need to be clarified, especially about changes in world science, while some are in the process of formation or dynamics. Recent analyses of dictionaries and textbooks in chemistry have proved this [5, p. 89].

At the present stage of development of Ukrainian chemical system, the terminology is associated with the constant borrowing of new terms from foreign languages and their modifications, the problem of the relationship between national and international ele-

ments in term formation and their interpretation in the Ukrainian language remains quite relevant. The next problem is related to the state of science and scientific speech. These issues are currently being discussed and investigated. It is very important to harmonize national chemical terminology with international ones.

The research consists in the harmonization of national and international components of chemical terminology, improvement of translation, transformation, and ways of interpretation of new terms with the involvement of powerful internal resources of the Ukrainian language, computer technologies [6, p. 174].

Although terms require regular unambiguous equivalents, neologisms make up most of the vocabulary. The problem of translating newly created terms has always been and will be relevant. In one country, the emergence of new terms does not create problems, as they are always created according to the rules of this language, and therefore their internal structure, and hence the meaning is always clear to experts. What concerns foreign sources, in order to be able to use them, you need to translate them. The translation must be accurate and literal. Therefore, each term must correspond to a certain equivalent. In the special literature, terms carry the main semantic load and occupy the main place. Also, these terms can not only consolidate the name of the concept but also distinguish it from related concepts for clarification.

The current rules of the IUPAC systematic nomenclature were created for the English-language scientific literature [3, p. 2]. We correctly use the term transformation here, not a translation, because it is primarily about the reproduction of the English word-term by Ukrainian phonetic and graphic means. Therefore, the translation applies only to some parts of names such as *-yl alcohol → -овий спирт; -oic acid → -ова кислота*, or some trivial names that have become systematic *benzene → бензен, naphthalene → нафтален, pyrrole → пірол*. There should be no special problems because the transformation is reduced to copying the basic Greek or Latin words, which have successfully adopted, given the known historical reasons, the English chemical terminology [7, p. 236].

But unfortunately, there are problems of transformation. They are related to the rules of term formation and peculiarities of Ukrainian spelling. The letter *-i* in the prefix *-di*, when it is before the vowel, changes to *-i*: *dioxide, diamine, diazine, diallyl, diene, diuranyl* – and does not change in all other cases: *dimethyl, dibutyl, disulfide, divanadate*. Note that this does not apply to the prefix of *tri-* or other morphemes or parts of a compound word with the final *-i*: *anti-, aci-, oxy-, proti-, hydroxy-, carboxy-, methoxy-, septic-, hexi-: trioxide, antioxidant, methoxyaniline*. In the prefixes *hemi-, semi-, sesqui-, bi-, thio-, thia-, poly-, quinqui-* always *-i*: *hemioxide, semicyclic, sesquiterpene, biphenyl, thiophenol, thiazole, quinkiphenyl, polyiodide*. The most common in chemical terms are the suffix *-yl*: *hydroxyl, vanadyl, hexyl, nitrile, sulfuryl, acetyl, acyl*. According to the rules of Ukrainian spelling, it is necessary to write *two-, three-, four-* before consonants and iotated vowels: *disubstituted, trichloride, quadrilateral*; and *two-, three-, four-* – before non-iotated: *diatomic, tribasic, four-element*.

Most of the Latin letters of the English alphabet correspond to the Ukrainian letters. But there can be no complete compliance. The English double grapheme *th* is transmitted in Ukrainian *t*, because the sound *[θ]*, which is graphically denoted by two letters *th*, is not in the *thiophene → міофен*, *ethyl → етил*. Another double grapheme *ph* and the letter *f* – both are transmitted by the Ukrainian letter *ф*, which denotes the phoneme *ф*: *phosphorus → фосфор, furan → фуран, sulfate → сульфат, phenyl → феніл*. The grapheme *rh* is transferred to the Ukrainian *р*: *rhodium → родій, rhodanide → роданід*. The triple grapheme *qui* is transmitted by Ukrainian *chi-* or *kvi-* or *ki*: *quinone → хінон, quinine → хінін, quinquiphenyl → квінкіфеніл*. The letter *x* is transmitted as *х*: *oxide → оксид, xylene → ксилен*. The letter *y* can be transmitted as *-у*, as well as: *pyrylium → пірихій*.

The transliteration of *c*, depending on its location in the English word, has two variants in the Ukrainian language – *k* and *ts*. Before the letters *e* and *y* in the English letter *c* corresponds to the Ukrainian - *с*: *acetone → ацетон, cyan → ціан*. Before other vowels, as well as consonants, the English letter *c* corresponds to the Ukrainian - *k*: *decane → декан, octane → октан, docosane → докозан*. The letters *g* and *h* correspond to Ukrainian *г*: *argon → аргон, hexane → гексан*. The ending *-ium*, which is characteristic of the names of cations, corresponds to *-ій*: *ammonium → амоній, oxonium → оксоній, sulfonium → сульфоній*. In the Ukrainian names of the elements *-ium* may fall out completely: *selenium → селен, uranium → уран*. The English letter *s* can be transmitted with the letters *с* or *с*: *samarium → самарій, glucose → глюкоза*.

Translating English terms *conjugation, conjugated, conjugate*, etc. more attention should be paid to the terms *conjugation, conjugated* and their derivatives: *hyperconjugation, conjugated basis, conjugated bonds, conjugate*, etc.

Such concepts as *dieBakterie – bacterium – бактерія, dieImmunität – immune – імунітет, dieSynthese – synthesizing – синтезування, haotisch – chaotic – хаотичний, differentiell – diffentioted – диференційований, das Distillation – distilling – дистилювання* are translated by transliteration, *derKarbunkel – carbuncle – карбункула, dieMixtur – mixture – мікстура, dieEssenz – essence – есенція, dasAtom – atom – атом, die Formel – formula – формула, das System – system* – by means of adaptive transcription. In terms of chemistry, the method

of translation with the lexical equivalent is more often used to denote substances: *derKalk – quicklime – негашене вапно, derSaltpeter – saltpeter – селітра, та адаптивне транскодування: derSulphur – sulfur – сірка*.

We can state that a term is a word or phrase with a historical motivation or a conditionally fixed meaning that reflects this concept in the field of specialized knowledge or production. Translating English terms into Ukrainian requires knowledge of translation-related fields, understanding the meaning of English terms, and knowledge of native language terms.

It should be noted that one of the simplest methods of translating a term is to use transcoding, letter-by-letter, or phonemic transmission of the original lexical unit using the alphabet of the language of translation. This technique is a rare exception in the practice of technical translation.

Conclusions and prospects for further development. Terms – one of the most fluid and mobile layers of vocabulary. The composition of terminology is constantly changing due to the loss of some words, changes in meanings, the addition of new terms. Due to the rapid development of science in recent years, there has been a sharp increase in the number of terms. As a result, although terms require regular unambiguous equivalents, neologisms make up most of this section of vocabulary.

Background knowledge of translation theory includes an understanding of grammatical, lexical, terminological, and genre-stylistic difficulties of translation, as well as the ability to apply adequate translation methods and lexico-grammatical transformations. Therefore, mastering the knowledge of the subject area is necessary for a future translator.

According to the structural characteristics, the terms are one- and two-component. Based on the variation of structural parameters, different translation methods are used: they are different for one- and two-component terms of the studied group.

We also state that when translating terms into different languages, the method of translation is the same for Ukrainian and English. Translation of any term has its difficulties because it has many lexical, grammatical, and stylistic features that make special demands on translation. The difficulties arising from this situation increase several times when it comes to translating the terms introduced into the outline of the work of art.

These translation methods may see the prospect of further research in the translation of English chemical terms into Ukrainian and the practical application of other translation methods and technologies.

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