UNIVERSIDAD DE QUINTANA ROO

División de Ciencias Políticas y Humanidades

TRANSLATION OF THE DOCUMENT "ANALYTIC METHODS FOR ATOMIC ABSORPTION SPECTROMETRY" WITH DETAILED ANALYSIS OF THE TECHNIQUES USED BY THE TRANSLATOR

TRABAJO MONOGRÁFICO

Para obtener el grado de
Licenciado en Lengua Inglesa

PRESENTA
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To my great God who blesses me all the time and allows me to move forward.

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INTRODUCTION

Translation is to interpret the meaning of a text communicating the same message into another language. The source text happens to be the text that is going to be translated. The target language is the language into which it is going to be translated. When translating a text, it is necessary to take into account that there are different grammar rules in the two languages. There are also idioms and writing conventions. They need to be known in order to avoid misconceptions.

Another definition of translation is the reproduction of the closest natural equivalent of the source language message (Nida's 1975). It is very important to know that this activity requires creative problem-solving in social and cultural conditions. (Douglas Robinson 1997).

This paper offers information that helps to understand some of the analytical methods for atomic absorption spectrometry, which is the most used in water contamination treatment. This translation will be useful for the students of the environmental engineering career of the University of Quintana Roo. The importance of this translation is that this information can be used for those who need to use laboratory analytical equipment in their major.

Since the original version of this manual is in English, most students would be benefited by having this text translated into Spanish.

The information contained was taken from a Perkin Elmer manual. Each of the topics that were selected contains the scope of the analysis, the typical analytical procedure and the analysis of topics such as the Analysis of

Seawater (Determination of Major Cations), and Analysis of Seawater (Determination of Soluble Metals) among others.

Technical texts are more straightforward than others. The most common problem when translating a technical text is caused by the lack of understanding of the background assumptions and knowledge taken for granted by experts in a science field, in this case, the chemistry field.

When translating a technical text it is very important to translate all the terminologies correctly. For this reason, it is necessary to ask for the revisions of a person who has a degree of technical competence in the field in which is intended to work. Therefore, the text was revised by a person who is specialized in the chemist area.

That is the main reason why this project has been developed.

JUSTIFICATION

Modern societies need a clean water supply. It is related to the control of diseases. The restriction of it would affect many areas, such as the quality of life, commercial and industrial activities.

Water can be classified as fresh water. It is derived from surface sources and groundwater aquifers. Some examples of surface waters are rivers, lakes, and ice or snow. They tend to be turbid due to the presence of colloidal particles in them. Therefore, they undergo a treatment for turbidity removal before being used. On the other hand groundwaters have a high concentration of particular ions (elements), such as calcium, boron, fluoride and magnesium. It requires a minimum treatment, so it is most of the time preferred for individual homes or communities.

People expect water to be clear, colorless and odorless. It is necessary to do an analysis on water to find physical impurities in water and wastewater. The characteristics of water are turbidity, solids, odors, temperature and color. They are studied in order to know the quality of water. When water has an accumulation of colloidal particles, it seems to be turbid. The contaminants of water contribute to their load. Solids are divided into volatile or nonvolatile. The odor results from the presence of decaying organic matter that may be accumulated in deposits to show its condition for the anaerobic bacteria that produce noxious gases. There are methods to measure odors (D1391-51) designed to determine the odor concentration on a dilutions basis. Temperature affects considerably the parameter of water quality. The increase or decrease of temperature affects the respiration, growth, and reproduction of aquatic organisms.

The main reason for water treatment is health. In the late 1800s and 1900s there have been diseases caused by ingesting water that is contaminated. Some diseases like cholera and typhoid fever are caused by contaminated water. Thus, a way of protection and preservation of the distribution system is water treatment.

According to the article published on line by the staff of the Environmental Contamination Laboratory there are several studies on pollution done in Chetumal Bay. All these studies aim to find the levels of pesticides in water resulting from the development of the city.

Another article published on line by a radio program mentions that Miguel Angel Ramos Real (commander of the naval sector in Chetumal) has already announced that the results of the analysis made in the Chetumal Bay show the presence of residues and pesticides in the bay.

Pesticides are compounds categorized as insecticides, herbicides, and fungicides. They display the solubility in water. Health effects vary according to chemical. They differ into problems that occur at high levels of exposure and chronically at low levels of exposure (Hodgson and Levi, 1996). The former includes liver and kidney damage; major interference with nervous and reproductive system functions; birth defects and cancer risks. At a low level exposure some effects are birth defects, cancer risks, interference with nervous and immune system function. The great majority of people ingest a greater source of pesticide in food than in drinking water (MacIntosh et al., 1996). Pesticides and nitrates represent the main sources of chemical aquifer contamination in agricultural zones (Dupuy, 1997)

As a result, the Secretary of the Navy closed more than sixty drains underground to avoid the discharge of waste into the bay. Despite this measure, the levels of contamination do not report a decline due to the agrochemicals used by farmers in Mexico and Belize.

I thought it would be interesting to do a translation about the analytical methods used in the treatment of contaminated water. That is the main reason why I decided to do the translation of this text.

There are people who are not aware of the contamination of the Bay and continue to swim and fish there. They might ignore the consequences of eating fish from contaminated water. Therefore, this kind of information could help people who are interested in water contamination treatment to use the most accurate methods in treatment of waters.

I will have the assistance of the Chemist José Luis Gonzales Bucio. This professor works at the University of Quintana Roo. He will help me with the technical words and will provide me some ideas to do this translation in a better way.

OBJECTIVES

This translation aims to help mainly students of the "Environmental Engineering" major and chemists who are interested in doing research about Water Contamination Treatment. As the text that has been selected is only available in English, it will be a useful tool for doing the research that their major requires.

It is necessary to study the factors related to the solution of this problem. So, the processes that occur in the atomic absorption and the atomic emission need to be well understood. The relation of these processes when doing a research on contaminated waters will be found at the beginning of the text.

The analysis of soils plays an important role in the process previously mentioned. I think it is important to focus the text on exchangeable cations. Therefore, some formulae, the Typical Analytical Procedure done trough a sample preparation, among other topics will be mentioned.

The topics that are going to be translated were chosen by the Chemist José Luis Gonzales Bucio due to their importance in the Chemistry field. They are cited as follows : The analysis of Seawater (Determination of Major Cations, Determination of Soluble Metals, Determination of Metals in Particulate Matter), Analysis of Natural Waters, Analysis of Fresh Water (Determination of Total Chromium). All the information previously mentioned will be available in Spanish if I do this translation successfully.

The topics previously mentioned where chosen for a professor who works at the University. He found them important because these topics are taught as part of a subject of the Engineering major.

THEORETICAL FRAMEWORK

Translation is to interpret the meaning of a text communicating the same message into another language. The source text happens to be the text that is going to be translated. The target language is the language into which it is going to be translated. When translating a text, it is necessary to take into account that there are different grammar rules in the two languages. There are also idioms and writing conventions. They need to be known in order to avoid misconceptions.

It is also very important to take into account that there are different translation techniques. These techniques allow translators to give more accurate and precise translations. Therefore the message can have the same meaning in both languages.

Krings (1986:18) defines translation strategies as "translator's potentially conscious plans for solving concrete translation problems in the framework of a concrete translation task.

Etymologically, translation means "carrying across" or "bringing across". The Latin
Translation derives from the perfect passive participle, translatum, of transferre ("to transfer" — from trans, "across" + ferre, "to carry" or "to bring").

The translation needs to apply methods that can be reduced to seven. They may be used combined with one or more of the others. It is not just about translating word by word. I will do the analysis of the text based on the Translation Techniques suggested by Jean-Paul Vinay and Jean Dalbernet. (1958).

This translation technique considers that the translation can be divided into **Direct or Oblique Translation.**

The **Direct Translation** is when both languages have parallel categories and the message is expressed in the same way. It is possible to translate element by element into the target language. This kind of translation is possible when there are not elements with metalinguistics differences difficult to be translated into another language.

There are three types of Direct Translation. They are: **Literal translation, Linguistic Borrowings** and **Calques.**

The first one is the **Literal translation.** This one can be divided into*: Word-for-word translation and Literal Translation.* The Word –for - word translation is the use of the first definition of a word in a bilingual dictionary and keeps the original word order. It is when you transfer a certain text of a second language into an appropriate target language and you do it with no changes of sentence order. This happens when both languages share the same culture or the same family (e.g. French and Italian). This makes the process of translating easier. This means, that it is not necessary to apply any special procedure or method.

The *Literal translation* is more flexible, since it allows the minimal adjustments of word order according to the target language such as: add Articles, change in order of noun/adjective, noun series. It is important to mention that this translation is not acceptable when:

a) The sense changes: it is all Greek to me= Me suena a chino
b) There is no sense: A red herring=Una pista falsa

c) There is not similarity: Rubbish=Tonterias or the phrase Sister in Law= Cuñada
d) Structural Reasons: She ran out screaming=Salió corriendo y gritando

The second one is the ***Linguistic Borrowing:*** This is when a word in the source language does not exist in the target language, so it must be borrowed from the source language: Café, menú (French), chofer(French), Pizza(Italian), etc.

1. Computer Terminology: Pixel, Chip
2. Neologism: Rap. Hip Hop

Words with a specific cultural content, that better stick to the original, like: Rubios, Poker, etc. French words need either to be translated or to use Latin: Coup D'Etat: Golpe de Estado, A volonté: Ad Líbitum

Some of the borrowings have become part of the lexicon of the target language. This happens because they are widely and frequently used in other languages.

The third one is ***Calque:*** It is a literal translation of a lexical item or expression forms of the source language, with an adaptation to the morphology of the target language. The syntagm is borrowed from the source language, and its elements are translated literally. An example of this can be: Baloncesto/Basketball

It is necessary to take into account the Cognates, which are words with a similar spelling or pronunciation in the two languages, with the same meaning.

Ex: International/Internacional

False Cognates: Similar spelling but different meaning

Ex: Actual/Real, Vigente

Partial or Semi-Cognates: Words with one equivalent which coincides and one more which doesn't. For instance: Conductor/Director de Orquesta /Conductor

On the other hand, there exists another kind of translation that is totally the opposite of the latter mentioned. This is the **Indirect Translation**, also called Oblique Translation. This means that the languages have no parallels categories and the message is not expressed in the same way. This kind of translation requires other procedures that can be more complex.

The **Indirect Translation** is at the same time divided into three procedures. They are *Transposition, Modulation, Equivalence, Adaptation, Expansion and Reduction*. This are listed and explained in the paragraphs below.

Transposition: It is a type of transformation in which there is a change in the order of the linguistic elements in relation to the original text. It happens when there is a replacement of one word class with another, but there is no change in the meaning of the message. The elements that can be transformed are:

Words, phrases and parts of sentences (simple or compound). It is useful to remember that the order of the main elements in the sentence – subject and predicate with complements –is not always the same in English and Spanish

For Instance:

- The military, naval, and air attachés to the embassy- *los agregados militar, naval y aéreo de la embajada*

It is the modification of the grammatical category of a part of the sentence without semantic variations.

Ex:
Adverb/Verb= He merely nodded-Se limitó a asentir
Verb/Noun=before he came back-antes de su regreso
Verb/Preposition=reports received indicate-según reportes recibidos
Phrase/Noun= a very nice woman- una belleza
Relative Clause/Participial form=which had first surged-surgido por primera vez
Gerund/Relative Clause=anyone predicting-quien hubiera predicho
GerungIPreposition=preparing for the XX century-hacia el siglo XX
Saxon Genitive/prepositional phrase=Bob's Travel-los viajes de Bob

Modulation: It is a variation of the message by means of a change in the perspective, in the point of view. This is done when despite the literal translation, the text happens to be grammatically unsuitable in the target language. This kind of procedure can be used when the translator have enough knowledge in both languages. If the translator does not have it, then he or she may give a wrong idea into the target language. It is necessary that the translation correspond to the situation that is being indicated.

For instance: Synechdoque: a part represents the whole or viceversa or Raw Material=material prima. It can also be an Opposing Term, such as: It's beyond price: No tiene precio

Equivalence: this happens when a translator tries to express mainly idioms or many onomatopoeia or animal sounds. It replicates the same situation as in the original, using a completely different word order. The most common example is when the translator wants to express the sound that is made when a person accidentally hurts his finger with a knife. If the person were French, he or she would say "Aïe", but if he or she were English, the sound that he or she would emit, it would sound like "Ouch".

For example: Idioms, Clichés, onomatopoeia, e.g. Once in a blue moon = muy infrecuente.

Adaptation: there is no common equivalent for a given expression, or when a situation in the source culture does not exist in the target culture. This kind of procedure needs to be done only when the translator does not want to give an overtranslation. This can be well understood when the text that is going to be translated includes an idea that can be misunderstood. When the text includes the idea of a different culture it is necessary to do an adaption into the target language. For instance, if the text includes the phrase: "white as snow", this idea is not well understood if the person who reads the book lives in northern climates. In this case the translator needs to find a phrase that refers to the purity of the color white.
This kind of procedure is used in the translation of books and titles of movies. It is kind of frequent and well known among the interpreters.

For instance: Bon Appetit-Buen Provecho-Enjoy your meal

Expansion or Addition: this happens when it is necessary to add one or more words to a phrase for a better understanding.

For example, when you say: Tienen interes en mantener bajo el precio, and when you translate it, you add the word vested = They have a Vested interest in keeping the price low.

Reduction : this happens when it is necessary to omit some elements in the target text. They are not really necessary.
As in the following example:

- Carta geográfica = map

It is necessary to mention that the text to be translated has information related to technical texts. The term 'technical' is suitably all-embracing as to include the scientific disciplines (medicine, physics. Astronomy, chemistry, etc.), fields of applied technology (computers, engineering, etc.) and even less obviously 'scientific 'subjects such as geography, economics, architecture and the like*

Technical writing (and its translation) is as old, historically, as literary writing and thus has a long and extensive tradition. It is formal and impersonal, and the formality is intrinsic to the conventionalized structures which will be illustrated below.

All technical texts will also, to some extent, be specialized in that they are produced to deal with a specific task in hand. They are, in general, informative in function though may also contain expressive elements: Giambagli (1992:64), referred to the importance of standardized formulae and technical terminology as a major component of technical text, where the writer (and translator) can feel much less bound by rules or conventions.

The grammar of scientific language may be considered complex by the technical nature of the content. Yet the language of everyday communication and non-technical texts is often more grammatically intricate.

It is also true that at first sight it is the obscure, specialized and, more importantly, unfamiliar vocabulary that makes the technical text seem so complex. Technical language has a higher proportion of complex noun phrases, a lower proportion of names and pronouns, and a few simple noun phrases as clause subject, for instance:
Two or more atoms joined to form a molecule are represented by… (from Yates 1988)
The nominal content of technical writing means that the lexical density of such texts is higher than in the more prevalently verbal non-technical texts. Lexical density can measure either the proportion of lexical words to function words or the proportion of lexical words to the number of clause in a text.

The sources of vocabulary for technical discourse are varied and go beyond the noun and group to include compounds, derivates (inelasticity), new applications of words in the general lexicon (force), neologisms(digital TV), borrowing and loans (software).

A series of broad characteristics helps to give a sense of inter textual coherence to technical text, and to recognize the appropriate register across languages.

METHODOLOGY

This project aims at doing a translation of a scientific text. It talks about chemistry terms that need to be studied in order to find information about Water Contamination Treatment.

The text will be divided into specific topics. This is with the objective of knowing and separating the information to better understand the topic.

The text will be divided in a way that the reader can understand the information by reading it in topics such as Emission and Absorption. In this short text there will be information about the processes of this two when they are used in a Spectrometer.

I know that doing a translation like this requires much more effort. I will start reading books that help me understand the topic. I will consult several sources before I start doing the translation itself. I will collect the necessary data to do my translation. As I mentioned in the introduction I will have the assistance of people specialized in the field.

I will study the different problems that I will face when doing the translation.
I would like to mention that I will take into account the lexical problems in technical translation.

As there are three sorts of problem arising from the specialized use of technical terms I think that I may face them. I may have the obvious problem of terms not used in everyday, ordinary language, which are, therefore, unfamiliar to the translator.
For Instance:

- Importancia de los restos de papas y camotes de época *Precerámica* hallados en el valle de Cama

The sentence given above contains an example of this problem. A term such as 'precerámico' is recognizable as belonging to a specialized scientific context. Without specific knowledge the translators cannot guess the exact meaning of the term or make a *reliable* guess. Of course, 'preceramic' (or 'pre-ceramic') is a likely candidate, but its appropriateness, as well as whether the word should be given with or without a hyphen, can only be established by dictionary research, or by consultation with an archaeologist.

The second problem I may face is that of terms which have ordinary uses familiar to the translator, but which is technically specialized in another way. That is, the familiar senses of the terms do not help, and may be hidden, so I may have troubles finding an appropriate rendering of the technical senses.

The third problem I may face is to find words that cannot be identified easily as wrong, but that they are used in a bad way. I think this may be the main problem for me, but I will ask for help to the Chemist José Luis Gonzales Bucio to avoid errors in the translation.

As I mentioned in the Introduction, the topic refers to the Chemistry field. Therefore, it is evident that I will have to deal with the understanding of Technical terms.
The first thing I will do is to follow the steps suggested to do a translation.

I will browse through the text to identify: source, type, register, readership, etc. Then, I will do the first reading to know the topic, context and the meaning. After that, I will do a second, deep reading, or reading with "translation intention", which is necessary to underline unknown terms, to write possible alternatives. When I had done this, I will do a preliminary translation, this mean that I will consult dictionaries, monolingual, bilingual, synonyms, antonyms, web dictionaries, manuals about technical terms, I will read other books to understand what the topic is about, I will consult other books, I will ask for the assessment of the teacher Alessio Zanier Visintin and the professor José Luis Gonzales Bucio. Then, I will compare my translation with the original text. After doing this, I will revise the words chosen to see if they match with the original text. After that, I will write a second draft, including changes if necessary and I will do a final draft to check the correctness in Spanish, grammar use, syntax, fluency, clarity, etc.

All the steps mentioned before are necessary for doing a good translation, especially one of this nature.

TRANSLATION

Métodos Analíticos para la Aplicación de Absorción Atómica
con Acoplamiento en Horno de Grafito

Pág. 179

Análisis de agua de mar: Determinación de cationes principales

Alcance: Este método describe la determinación directa de Calcio, Litio, Magnesio, Potasio, Rubidio, Sodio, y Estroncio en el agua.

Reactivos:
Carbonato de Calcio (Ca)
Oxido de Magnesio (MgO)
Carbonato de Potasio (K_2C)
Cloruro de Sodio (NaCl),
Acido Clorhídrico (HC1)

Solución de agua de mar artificial. Transferir 0.999g de $CaCO_3$ (Carbonato de Calcio), 2.074g de MgO (Oxido de Magnesio), 1.414g de K_2CO_3 (Carbonato de Potasio), y 25.41 g de NaCl (Cloruro de Sodio) a un matráz volumétrico de 1 litro. Disuelve en un volumen mínimo de 1+1HC1, y diluye al volumen con agua desionizada. La solución final contiene 10,000 Ppm^1/Ml^2 de Na, 1,250 Ppm /Ml de Mg, 400Ppm/Ml de Ca, y 400Ppm/Ml de K.

Soluciones Estándares

Los estándares para Calcio, Magnesio, Potasio y Sodio son preparados por dilución apropiada de la solución estándar en preparación ya existente del suministro de soluciones descritas bajo las condiciones estándar con agua desionizada. Para los elementos traza (Litio, Rubidio y Estroncio), diluir las soluciones estándares en preparación para niveles de concentración apropiada con la solución de agua de mar artificial.

Preparación de Muestra

Filtra todas las muestras a través de un filtro Millipore de 0.45 micras. Diluye las muestras de Calcio, Magnesio, Potasio y Sodio con agua desionizada para colocar la concentración del volumen dentro de un rango apropiado. Las muestras de Litio, Rubidio, y Estroncio pueden ser aspiradas directamente.

Análisis

Determinar la concentración de los elementos de interés usado en el Procedimiento de Rutina dado en la sección de Información General. Al determinar los elementos traza (Li, Rb, Sr), usar la solución sintética de agua de mar como un blanco reactivo.

Cálculos

Elemento Ppm= (Ppb ^{3}en la muestra de la solución) (d.f)
Donde d.f= factor diluyente,

Si se usa

$$= \frac{\text{Volumen final de la alícuota}^2 \text{ diluida}}{\text{Volumen de alícuota tomado para la dilución}}$$

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EN-2 Análisis de Agua de Mar: Determinación de Metales Solubles

Alcance

Este método describe la determinación de Cobalto soluble, Cobre, Hierro, Plomo, Níquel, y Cinc en agua de mar y otras aguas salinas por la extracción simultanea de complejidad con Pirrolidina Amonica Ditiocarbonatada (PADC) en Metil Isobutil Cetona (MIC). Las concentraciones típicas de estos elementos en agua de mar varían de menos de 0.1 Ppb*
A más de 10 Ppb/1

Reactivo

Acido Clorhídrico, HCl, redestilado
Isobutil Metil Cetona (IMC), redestilado

La solución de Pirrolidina Amonica Ditiocarbonatada (PADC), 1%(p/v) en agua desionizada, destilada. Preparar la solución PADC nueva diariamente y purificar como sigue: Mezclar la solución PADC con un volumen igual al de la MIC, permitir a las fases separarse y retener la fase acuosa (más baja).
Preparación de Muestra

Filtrar la muestra de agua de mar a través de un filtro Millipore de 0.45 micras y acidificarla con HC1 (Acido Clorhídrico) a un Ph de 4-5. Colocar una alícuota de 750 Ml del agua de mar acidificada y filtrar en un matraz de propileno de 1 litro. Agregar 35 Ml de MIC, seguido por 7 Ml de

solución PADC al 1%. Equilibrar por 30 minutos en un agitador magnético. Separar la capa orgánica en un embudo de separación y guardarlo en un frasco de propileno. Los extractos deben ser analizados dentro de 3 horas. Conservar la capa acuosa para la preparación de la soluciones estándares.

Soluciones Estándares

NOTA: Debido a que la eficiencia de extracción por los complejos de la solución PADC es diferente para el agua de mar que para una solución acuosa simple, las soluciones estándares deben de ser preparadas en un matriz de agua de mar, así como se describe abajo. Similarmente, la solubilidad del MIC en agua de mar es dependiente de la temperatura. El método de preparación de las soluciones estándares descrito abajo, está basado en el uso de soluciones a 20^{o}C. Para las soluciones a otras temperaturas, el volumen de MIC retenido por el extracto de agua de mar será diferente, y deben ser usados diferentes volúmenes de MIC. Consulta la referencia citada debajo para más detalles.

Agregar 20 Ml de MIC a la capa acuosa obtenida de la extracción de las muestras de agua de mar, (Ver la Sección de Preparación de Muestra), y reposarlo por 5 minutos. Permitir que se separen las capas y desechar la capa orgánica.

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Combinar todos los extractos de muestras de agua de mar para garantizar la homogeneidad y para proveer un volumen suficiente de diluyente para la preparación de soluciones estándares.

Preparar los estándares de dilución adecuados de la solución en preparación descrita bajo las Condiciones Estándares para cada elemento, ajustando el Ph de los estándares a 4 con HC1. Agregar las cantidades en incremento de estos estándares de dilución al extracto de agua de mar para preparar mezclas estándares que contengan 0,2, 5, y 10ppb de los elementos de interés. Agregar 20 Ml de MICa 750 Ml de los estándares y luego 7 Ml de solución PADC al 1%. Sacudir por 30 minutos y separar las fases como se describe bajo la Preparación de Muestra.

Análisis

Determinar la concentración del elemento de interés usando el procedimiento para las Determinaciones de Traza descritas en la Sección de Información General. Ver también la sección de solvente orgánicos.

Cálculos

Leer la concentración de los elementos de interés directamente contra los estándares apropiados y el blanco reactivo.

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EN-3- Análisis de agua de Mar: Determinación de Metales en Materia Particulada

Alcance

Este método describe la determinación de Cobalto, Cobre, Hierro, Plomo, Níquel y Cinc en materia particulada en aguas salinas y puede ser aplicable a otros elementos.

Reactivos

Acido clorhídrico, HC1 redestilado
Acido Clorhídrico 6 Normal. Diluir 516 Ml de concentrado y redestilado de HC1(11.6) a 1 litro con agua desionizada, destilada
Acetona, redestilada

Soluciones Estándares

Preparar una mezcla de solución estándar en 6NHCl de las soluciones estándares en preparación descritas bajo las Condiciones Estándar para cada elemento. A 5 Ml de la mezcla estándar, agregar a un filtro Millipore de .45 micras y 15 Ml de acetona para lavar el filtro. Preparar un blanco reactivo, usando 5 Ml de HCl (6N), y tratar como se describe arriba para la mezcla estándar.

Preparación de la Muestra

Filtrar un litro de agua de mar a través de 1 filtro de 0.45 micras Millipore, lavar con 50 Ml de agua destilada y colocar el filtro en un frasco de propileno. Agregar 5 Ml de HCl (6N), sellar el frasco y calentar a 700^{o}C durante una hora. Agregar 15 Ml de acetona para disolver el filtro y formar una fase simple.

Análisis

Las soluciones son aspiradas directamente y la concentración de los elementos de intéres es determinada usando el Procedimiento de Rutina descritas en la Sección de información general.

Cálculos

Elemento (ppb)= ppb de la muestra de solución.

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EN-4- Análisis de Aguas naturales

Alcance

Este método describe la determinación de Calcio, Cobre, Litio, Magnesio, Manganeso, Potasio, Sodio, Estroncio, y Cinc en aguas naturales y puede ser aplicable a otros elementos.

Reactivos

Solución de Lantano, 5% p/v. Preparar como se describe bajo las condiciones estándares para el Lantano (La)
Acido Clorhídrico concentrado, HCl

Soluciones Estándares

Preparar todas las soluciones estándares, excepto las del Calcio y Magnesio según las diluciones adecuadas de las soluciones en preparación descritas bajo las condiciones estándares para cada elemento. Para el Calcio y Magnesio, diluir las soluciones en preparación con el 5% (p/v) de la solución de Lantano, y ácido clorhídrico, HCl para obtener los estándares diluido, los cuales contengan 0.25% (p/v) de Lantano y 5% (v/v) de Acido Clorhídrico.

Preparación de la Muestra y Análisis

Filtrar cada muestra a través de un filtro de membrana Micropore de 0.45 micras si es necesario, para evitar la obstrucción capilar del quemador. Aspirar cada muestra directamente, excepto la del Calcio y la del Magnesio. Para la del Calcio y la del Magnesio, diluir al 5% (v/v) de solución de Lantano y HCl para obtener una concentración de solución final de 0.25% (p/v) de Lantano y 5% (v/v) de HCl. Determinar la concentración del elemento de interés usando el Procedimiento de Rutina como se describe en la Sección de Información General. Los resultados del Calcio y del Magnesio deben ser corregidos usando un blanco reactivo.

Cálculos

Leer la concentración del elemento de interés directamente contra los estándares apropiados. Donde una dilución* es requerida, la concentración de los elementos de interés es calculada como sigue:

Elemento ppM

$$= \frac{(\text{ppM en solución dividida})\ (\text{volumen de solución dividida en Ml})}{\text{Volumen de alícuota tomada para la dilución en Ml.}}$$

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EN-7-Análisis de Agua Dulce: Determinación del Cromo Total

Alcance

Este método describe la determinación del Cromo en agua dulce por absorción atómica. El Cromo es quilatado y extraído con MIC. El límite de detección es cerca de 1 L de ppB

Reactivos

Permanaganato de Sodio, $KmnO_4$ al 0.1 Normal. Disolver 0.32 g de $KmnO_4$ en agua desionizada y diluir a 100 Ml.
Azida de Sodio, NaN_3, al 0.1% (p/v). Disolver 0.100 g de NaN_3 en agua desionizada y diluir hasta 100 Ml.
Azul de Bromofenol, al 0.1% (p/v). Disolver 0.100g de Azul de Bromofenol en 50 Ml de Etanol al 95% y diluir a 100 Ml con agua desionizada.
Hidroxido de Sodio al 1.0 Normal, NaOH. Disolver 40g de NaOH en agua desionizada y diluir a un litro.
Acido Sulfúrico, H_2SO_4, al 0.25 Normal. Mezclar 7.0 Ml de Acido Sulfúrico (sp.gr.1.84) con agua desionizada y diluirlo hasta un litro.
Pirrolidina Amonica Ditiocarbonatada, PADC, al 1% (p/v). Disolver 1g de PADC en agua desionizada y diluir hasta100 Ml. Preparar una mezcla fresca diariamente.
Agua desionizada, acidificada. Agregar 1.5 Ml de Acido Nítrico a 200Ml de agua desionizada y diluir hasta un litro con agua desionizada.
Dicromato de Potasio, $K_2Cr_2O_7$
Sulfato de Sodio, Na_2SO_3

Acido Sulfúrico concentrado, H_2SO_4

Metil Isobutil Cetona, MIC

Etanol, al 95%

Soluciones Estándares

La solución estándar de Dicromato de Potasio al 0.08mg Cr/Ml. Disolver 0.2263g de $K_2Cr_2O_7$ en agua desionizada y diluirla a un litro.

La solución en preparación de Cromo Trivalente, 2µgCr^{+3}/Ml. Pipetear 5.00 Ml de la solución estándar de Dicromato de Potasio en un matraz de Erlenmeyer. Agregar cerca de 15mg de Na_2SO_3, y

0.5 Ml de HNO_3. Evaporar poco a poco hasta la sequedad, ya que el calentamiento intenso reoxidará el Cromo. Agregar 0.5 Ml de HNO_3 y evaporar nuevamente hasta la sequedad. Disolver los residuos en 1Ml de HNO_3 con calor y diluir hasta 200 Ml con agua desionizada.

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La solución de Cromo Trivalente, 0.5µgCr^{+3}/Ml. Diluir 25.00 Ml de la solución en preparación de Cromo a 100 Ml con agua desionizada inmediatamente antes de usar.

Preparación de la Muestra

Pipetear 100 Ml de la muestra que contenga menos de 25µg/L(PPB) de Cromo en un matraz volumétrico de 200 Ml. Ajustar el Ph a 2.0 o menos, con HNO_3 (Acido Nítrico), si es necesario. Preparar un blanco y estándares adecuados usando la solución* de Cromo trivalente y el agua desionizada, acidificada. Agregar $KmnO_4$, al 0.1 N(Permanganato de Potasio al 0.1 Normal), gota a gota a la muestra y a los estándares hasta que persista un color rosado. Calentar a baño María durante 20 minutos, agregando una solución de $KmnO_4$ adicional si el color desaparece. Mientras aún esté en el proceso a baño María, agregar 0.1% de Azida* Nitruro de Sodio, HNO_3 gota a gota, hasta que el color rosa simplemente desaparezca. Calentar las soluciones alrededor de 2 minutos entre cada gota para evitar un exceso. Calentar por 5 minutos adicionales después de la adición final de NaN_3. Transferir las muestras a un baño de agua a temperatura ambiente y enfriar.

Filtrar aquellas muestras, las cuales tengan un precipitado o color marrón a través de un papel filtro Whatman # 40 en un matraz afonado volumétrico de 200 Ml. Agregar 200 Ml de NaOH (Hidróxido de Sodio) al 1 Normal, y 2 gotas del indicador Azul de Bromofenol. Agregar NaOH adicional, si es necesario, para efectuar un cambio indicador de amarillo a azul. Agregar a gotas 0.25NH_2SO_4 (ácido sulfúrico) hasta que el color azul simplemente desaparezca, y luego agregar un adicional de 2.0 Ml.

Agregar 5.0 Ml de APDC (Pirrolidina amónica ditiocarbonatada) al 1% y mezclar. Agregar 10 Ml de MIBK (Cetona Metil Isobutil) y mezclar enérgicamente por tres minutos. Permitir a las capas separarse y agregar agua desionizada hasta que la capa de cetona esté completamente en el borde del matraz. Tapar el matraz y permitir que repose durante toda la noche antes del análisis.

Análisis

Determinar la concentración de cromo en cada muestra usando las condiciones estándares para Cr (cromo) y el procedimiento para las Determinaciones de Traza dadas en la sección de Información General. La determinación cero debe ser ajustada mientras se aspira el agua saturada de MIBK.

Cálculos

O se calibra la lectura para leerla directamente en µg/l Cr (µg/l de Cromo) usando el estándar extraído y el blanco, o se calcula la concentración de cromo de la siguiente formula, corrigiendo ambos, el estándar y la muestra para lecturas del blanco, si existe alguna.

$$DCr\ (\mu g/L) = \frac{(\text{Concentración del estándar de Cromo})\ (\text{Absorbancia de muestra}}{(\ \text{absorbencia del estándar}\ )}$$

ANALYSIS

As it was mentioned before, the translation of this document will be analysed taking into consideration one of the most important techniques explained by Jean-Paul Vinay and Jean Dalbernet. The translation was done from English into Spanish. First, the definitions of the methods that were applied will be mentioned one by one, so that readers have a clear idea of them. The translator decided to make a chart divided into two parts. The first column will contain the English version taken from the original text; the second one will contain the Translation in Spanish. It is important to notice the page number and the line that appear in the Spanish version to easily find the information. Finally, the translator will explain the difficulties she faced when doing this translation.

LITERAL TRANSLATION

According to Jean Paul Vinay and Jean Darbelnet, this technique is recognized by the use of the first definition of a word in a bilingual dictionary and keeps the original word order. It is when you transfer a certain text of a second language into an appropriate target language and you do it with no changes of sentence order.

In the following phrase, it can be appreciated the use of the "word-for-word" method. It allows minimal adjustments of word order according to the target language.

ENGLISH VERSION	SPANISH VERSION
This method describes the *direct determination* of calcium, lithium, magnesium, potassium, rubidium, sodium and strontium…	Este método describe la *determinación directa* de Calcio, Litio, Magnesio, Potasio, Rubidio, Sodio y Estroncio… Página 179 línea 2,3
Determine the concentration of the element of interest…	Determinar la concentración de los elementos de interés… Página 179 línea 23
This method describes the determination of soluble cobalt, copper, iron, lead, nickel and zinc…	Este método describe la determinación de Cobalto soluble, Cobre, Hierro, Plomo, Níquel y Cinc. Página 181 línea 2,3

LINGUISTIC BORROWING

According to Jean Paul Vinay and Jean Darbelnet, this technique is used when a word in the source language does not exist in the target language, so it must be borrowed from the source language.

In the following phrases, it can be appreciated the use of the linguistic borrowing method because the first word refers to the name of an equipment that is not available in both places. So, the name must be borrowed from the source language. In the second phrase, the word refers to the name of a flask (it comes from the German name of the person who designed it, Emil Erlenmeyer).

ENGLISH VERSION	SPANISH VERSION
Filter each sample trough a 0.45 micron *micropore* membrane filter…	Filtrar cada muestra a través de un filtro de membrana *micropore* de 0.45 micras… Página 184 línea 13

CALQUE

According to Jean Paul Vinay and Jean Darbelnet, this technique is a literal translation of a lexical item or expression forms of the source language, with an adaptation to the morphology of the target language. The syntagm is borrowed from the source language, and its elements are translated literally.

In the this phrase, the word refers to the name of a flask (it comes from the German name of the person who designed it, Emil Erlenmeyer). Thus, the only word that is translated is flask, the other one remains the same because belongs to a proper name.

ENGLISH VERSION	**SPANISH VERSION**
Pipet 5.00mL of the potassium dichromate standard solution into an *Erlenmeyer* flask.	Pipetear 5.00 mL de la solución estándar de Dicromato de Potasio en un matraz de *Erlenmeyer.* Página 188 línea 27,28

INDIRECT TRANSLATION

TRANSPOSITION

According to Jean Paul Vinay and Jean Darbelnet, this technique is a type of transformation in which there is a change in the order of the linguistic elements in relation to the original text. It happens when there is a replacement of one word class with another, but there is no change in the meaning of the message. The elements that can be transformed are:
Words, phrases and parts of sentences (simple or compound).

In the following phrases the parts of the sentences have a change in order, this happens because the order of the main elements in the sentence –subject and predicate with complements –is not always the same in English and Spanish.

ENGLISH VERSION	SPANISH VERSION
Ammonium pyrrolidine dithiocarbamate (APDC) solution	La solución de Pirrolidina Amónica Ditiocarbonatada (PADC) Página 181 línea 10
…in distilled, deionized water.	…en agua desionizada, destilada. Página 181 línea 10, 11

MODULATION

According to Jean Paul Vinay and Jean Darbelnet, this technique is a variation of the message by means of a change in the perspective, in the point of view. This is done when despite the literal translation, the text happens to be grammatically unsuitable in the target language. This kind of procedure can be used when the translator have enough knowledge in both languages. If the translator does not have it, then he or she may give a wrong idea into the target language. It is necessary that the translation correspond to the situation that is being indicated. Proverbs and metaphors are an example of modulation.

This method was not used in the translation of the text due to the nature of the text.

Nevertheless, some examples are given in the following chart.

ENGLISH VERSION	SPANISH VERSION
Every dog has its day	Cada quien recibirá éxito o satisfacción en su vida
From head to toes	De la cabeza a los pies
Actions speak louder than words	Las acciones valen más que las palabras.

EQUIVALENCE

According to Jean Paul Vinay and Jean Darbelnet, this technique is used when a translator tries to express mainly idioms or many onomatopoeia or animal sounds. It replicates the same situation as in the original, using a completely different word order. The most common example is when the translator wants to express the sound that is made when a person accidentally hurts his finger with a knife. If the person were French, he or she would say "Aïe", but if he or she were English, the sound that he or she would emit, it would sound like "Ouch". It deals with idioms, clichés and onomatopoeia.

This method was not used in the translation of the text due to the nature of the text.
Nevertheless, some examples are given in the following chart.

ENGLISH VERSION	SPANISH VERSION
Daily dozen	Ejercicio rutinario
Lady killer	Conquistador
Party pooper	Aguafiestas
Piece of cake	Pan comido
Play ball	Cooperar

ADAPTATION

According to Jean Paul Vinay and Jean Darbelnet, this technique is used when there is no common equivalent for a given expression, or when a situation in the source culture does not exist in the target culture.

In the following phrase there is a necessary adjustment that allows students to better understand the idea of the procedure. It is necessary to remind that the text is translated for an audience who knows and understand the term "baño María".

ENGLISH VERSION	SPANISH VERSION
While still on the *steam bath*…	Mientras aún esté en el proceso a *baño María…* Página189 línea 10

EXPANSION

According to Jean Paul Vinay and Jean Darbelnet, this technique is used when it is necessary to add one or more words to a phrase for a better understanding.

For example, when you say: Tienen interes en mantener bajo el precio, and when you translate it, you add the word vested = They have a Vested interest in keeping the price low.

In the following phrase there is a necessary expansion of the words "La", and "en", this allows readers to better understand the text.

ENGLISH VERSION	SPANISH VERSION
Trivalent chromium *stock* solution…	*La* solución *en preparación* de Cromo Trivalente… Página 188 línea 27

REDUCTION

According to Jean Paul Vinay and Jean Darbelnet, this technique is used when it is necessary to omit some elements in the target text. They are not really necessary.

This method was not used in the translation of the text due to the nature of the text.

Nevertheless, some examples are given in the following chart.

ENGLISH VERSION	SPANISH VERSION
Exponer de manera visible	To display

CONCLUSION

The act of translating a text is so interesting and challenging that gives you a great satisfaction when you do it well. Thus, it is very important to capture the accuracy of the original document. The translator needs to be aware of the best techniques and methods that exist to get the most accurate, quick and professional translation.

It is not just important to write well, but also to understand the original text, master grammar and vocabulary, get familiar with the idiomatic ways of expressing things and to express the intended meaning in the most accurate and precise manner.

The text was not easy to translate. The main problem that the translator had to overcome was the terminology of the words. When doing this kind of translation it is necessary to be sure that you are going to have the support and assistance of people specialized in the area, so that they can help you with the revision of the technical words and avoid misconceptions.

I had the assistance of professor Alessio Zanier Visitin who is specialized in the area of translation; I also had the assistance of professor José Luis Gonzalez Bucio, who is specialized in the Chemist area.

I strongly recommend you to look for a topic that can be easily understood or in case you want to do a technical work, you make sure to understand what you read and to do your best in order to get the most accurate translation.

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APPENDIX