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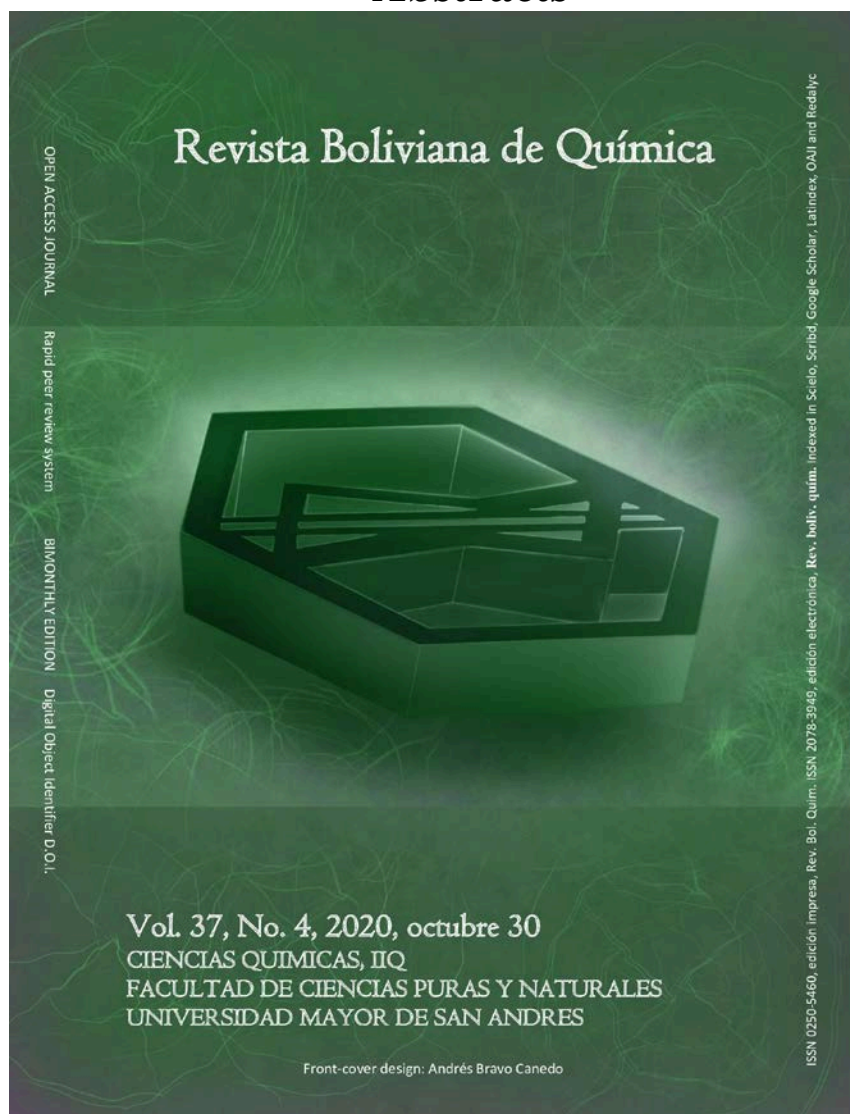
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## Abstracts



**DISTRIBUTION OF HEAVY METALS AND METALLOIDS IN SURFACE WATERS AND ON SEDIMENTS OF THE CRUCERO RIVER, PERU**

**DISTRIBUCIÓN DE METALES PESADOS Y METALLOIDES EN AGUAS SUPERFICIALES Y SEDIMENTOS DEL RÍO CRUCERO, PERÚ**

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**Keywords:** *Heavy Metals, Metalloids, Pollution, Physicochemical Parameters, River.*

**Palabras clave:** *Metales pesados, Metaloides, Contaminación, Parámetros fisicoquímicos, Río.*

**ABSTRACT**

The accumulation of inorganic pollutants in environmental compartments represents a serious problem worldwide, as they generally come from urban and industrial activities with inadequate waste management. Heavy metals are priority inorganic pollutants whose accumulation and distribution in freshwater bodies can make them potentially dangerous, becoming toxic when they reach living organisms that make up the food chain. The crucero river is located in the department of Puno, Peru, it converges with other rivers belonging to the Ramis Basin, whose mouth is located in Lake Titicaca.

Wastewater discharges from mining, urban and rural activities are dumped into this river. For the study, the dry season was taken into account (May 2017), five sampling stations were selected along the river and the basic physical-in-situ parameters were determined, including pH, temperature, electrical conductivity and redox indexes.

Samples of water and superficial sediments were collected and the concentration of heavy metals (cadmium, zinc and arsenic) present in the samples was analyzed by means of induction coupled plasma atomic emission spectroscopy.

The results showed that the water under scrutiny was not suitable for human consumption, a fact proven by pH values greater than 8.5, which do not comply with the regulations established by the world health organization (WHO). On the other hand, the concentration value of metals in water does not exceed national environmental quality standards or the values of criteria external to the country; however, there is certainty of contamination with arsenic, cadmium and zinc in sediments under the national and international regulations scope.

# ADSORPTION AND INERTIZATION OF POLYCHLORINATED BIPHENYLS (PCBs) ON ULEXITE, IN THE MANAGEMENT PROCESS OF DIELECTRIC OILS

## ADSORCIÓN E INERTIZACIÓN DE BIFENILOS POLICLORADOS (PCBs) SOBRE ULEXITA, EN EL PROCESO DE GESTIÓN DE ACEITES DIELECTRICOS

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**Keywords:** *Polychlorinated biphenyls, Adsorption, Inertization, Management processes.*

**Palabras clave:** *Bifenilos policlorados, Adsorción, Inertización, Procesos de gestión.*

### ABSTRACT

The dielectric oils used in the last century in electrical transformers and capacitors are substances that contain PCBs (polychlorinated biphenyls). The exposure and contact of the human being with these substances, PCBs, through air, water and soil carries the risk of the appearance of cancer, which is why their identification, treatment, isolation and / or inerting is of vital importance for the environment and human health.

This study proposes the adsorption and inertization of PCBs as dielectric oil management processes using solids as adsorbent supports. This basically includes going from a liquid oil (little manipulable) to a "solid" (oil adsorbed on a support). As a result of this study, ulexite was used as a support. Subsequently, this solid was coated with calcium carbonate for the inerting of PCBs from the dielectric oil, thus limiting its interaction or reaction with the environment and humans. The final product is thus ready for storage by encapsulation with concrete while having access to the technology to incinerate dielectric oils with PCBs.

**ASSESSMENT OF THE PRESENCE  
OF HEAVY METALS, AS FOR AN  
INVENTORY ON GARLIC, ONION AND  
IN SEMIURBAN SOILS OF AREQUIPA,  
PERU**

**EVALUACIÓN DE LA PRESENCIA  
DE METALES PESADOS, COMO PARA  
UN INVENTARIO EN AJO, CEBOLLA Y  
SUELOS SEMIURBANOS DE  
AREQUIPA, PERÚ**

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**Keywords:** *Heavy metals, Garlic, Onion, Soils accumulation, ICP-MS.*

**Palabras clave:** *Metales pesados, Ajo, Cebolla, Acumulación de suelos, ICP-MS.*

**ABSTRACT**

The objective of this study is the evaluation of the accumulation of heavy elements, namely Pb, Cr, Cd, Tl, Cu, Co in garlic, onion and soil of semi-rural soils and its potential effect on the health of the population of the city of Arequipa. The results showed concentrations below the permissible limits for all of them in garlic, onion and soils in accordance with international standards, showing that the accumulation of heavy metals in the soil does not exceed the limits according to international standards.