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TO THE CHOICE OF THE SEWAGE TREATMENT METHOD OF ANODIZING BLOCK FROM ALUMINIUM ALLOYS

The Petrozavodsk enterprise «Engineering centre of a fire robotics» is the innovative enterprise for working out and manufacture of fire robots and fire trunks. By working out of fire technics use of easy and highly proof anticorrosive materials because of constant contact to the excited environments, causing fast wearability of details is necessary. Easy aluminium alloys do not possess due anticorrosive properties, for increase of their stability to aggressive foam makers and sea water of a detail anodize. In this connection on the basis of factory of fire robots and ствольной technicians of ITSPR FR it is created and the anodizing block functions. The technology of anodizing is developed professor N. M. Jakovleva (Petrozavodsk). Authors of article develop technology and the project of industrial local sewage treatment from anodizing block.

The technology of the basic manufacture includes: processing of details from a buttered covering a washing-up liquid «Ecolclin-AL», alkaline etching of samples in a mix from 3% of a solution of caustic sodium NaOH, three sodium phosphate (temperature 40–50 °C, t = 30–60 c), washing in flowing warm and cold tap water, processing in 15–20% a solution of nitric acid for removal from a surface of details deposits, washing in flowing cold water from a city waterpipe, detail anodizing in 15% solution H₂SO₄ at 2A/dm², electrochemical colouring in a solution of % MgSO₄ of + 0,6% H₂SO₄ of 2% CuSO₄ + 2 an alternating current with the subsequent careful washing, fastening of painting pigments in a metals pores, increase in light resistance and corrosion firmness of films at the expense of the painted products processing by the hot distilled water within 30 minutes.

Industrial sewage formed from oil sink of details, from washing of details after a bath with nitric acid, after a bath with sulfuric acid, after a bath with copper vitriol, sulfuric sour magnesium and sulfuric acid.

Department of WWH PetrGu spent a complex to calculation on volume of formed pollution, concentration of pollution, acidity of a formed drain is defined. Treatment facilities which structure includes the device flotation gathering of oil from a bath surface for washing, the flotation device gathering slime from a bottom of an alkaline bath and flotation removal slime from a bottom of a nitric bath are developed.

Neutralisation of sewage with sulfuric surplus and nitric acids goes a filtration through a marble crumb with formation of an insoluble deposit (plaster) CaSO₄·2H₂O.

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АКТИВНОСТЬ ЛИЗОСОМАЛЬНЫХ ФЕРМЕНТОВ В ОРГАНАХ МИДИИ СЪЕДОБНОЙ В ЗАВИСИМОСТИ ОТ НАКОПЛЕНИЯ ТЯЖЕЛЫХ МЕТАЛЛОВ

Воздействие комплекса природных и антропогенных факторов со временем изменяет состояние Белого моря. Отмечается локальное загрязнение эстуариев и побережья поллютантами, в том числе тяжелыми металлами (ТМ). Физиолого-биохимические механизмы устойчивости гидробионтов к этим токсикантам изучены недостаточно.

Цель работы – изучение влияния ионов ТМ на некоторые биохимические показатели моллюсков *Mytilus edulis* L. Эксперименты проводили на ББС ЗИН РАН. Мидий выдерживали в аквариумах с различными концентрациями хлоридов кадмия и меди. Испытывали концентрации (в пересчете на катион): Cu²⁺ – 5, 50 и 250 мкг/л; Cd²⁺ – 10, 100 и 500 мкг/л. Экспозиция составляла 24 и 72 часа. В тканях мидий определяли содержание ТМ, общий белок и активность 5 лизосомальных ферментов (Высоцкая, Немова, 2008). Количество ТМ в мягких тканях моллюсков определяли атомно-абсорбционным методом в аналитической лаборатории Института леса КарНЦ РАН.

В тканях моллюсков происходило существенное накопление ТМ, зависевшее от концентрации соли и времени выдерживания мидий в условиях эксперимента. Содержание кадмия в тканях опытных моллюсков было выше в 25–29 раз, а меди – в 3–4 раза по сравнению с контролем. Под

воздействием ионов ТМ изменялось содержание белка в органах: в пищеварительной железе под влиянием кадмия отмечено снижение, а в жабрах при высокой концентрации и длительной экспозиции происходило его повышение. Медь оказывала более существенное воздействие на этот показатель: в пищеварительной железе в начале эксперимента наблюдалось небольшое повышение, а в жабрах уже при концентрации 5 мкг/л – превышение в 2 раза контрольных значений. Активность лизосомальных гидролаз под влиянием ТМ изменялась неоднозначно. В пищеварительной железе происходило угнетение, а в жабрах – активация кислых гидролаз.

Таким образом, ТМ накапливаются в мягких тканях мидий и вызывают тканеспецифичные сдвиги в метаболизме, зависящие от концентрации, времени воздействия и химической природы действующего вещества.

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EFFECT OF HEAVY METAL ACCUMULATION ON SOME ENZYMATIC ACTIVITIES OF THE WHITE SEA MUSSELS *MYTILUS EDULIS*

Impact of complex of natural and anthropogenic factors changes state of White Sea eventually. Is noted local pollution of estuaries and coast with contaminants, including heavy metals (HM). Physiological and biochemical mechanisms of resistance of aquatic organisms to these toxicants are studied enough.

The aim of work is learning of influence of ions of HM to some biochemical indexes of clams *Mytilus edulis* L. Experiments were conduct by WSBS «Kartesh» of Zoological Institute RAS. Mussels were kept in aquariums with different concentration of cadmium chloride and copper chloride. Concentrations were tested (conversion to a cation): Cu²⁺ – 5, 50 and 250 mcg/l; Cd²⁺ – 10, 100 and 500 mcg/l. The experiment was been lasted for 24 and 72 hours. Content of HM, general protein and activity of 5 enzymes were been determine in mussel's tissue. Number of HM in soft tissues was determined by atomic absorption method in analytic laboratory of Forest Research Institute of Karelian Research Centre RAS.

Significant accumulation of HM occurs in tissues of clams, which was depended on concentration of salt and time-keeping mussels in the experimental conditions. Content of cadmium was 25–29 times as big as control and content of copper was 3–4 times as big as control. Content of protein was been changed by impact of ions of HM: there was reduction of it by impact of cadmium in digestive gland, there was increase of it with high concentration and long time of exposition in gills. Copper influenced more significantly with this index: There was a little increase in the beginning of experiment in the digestive; there was excess as twice as big control index with concentration 5 mcg/l. Activity of lysosomal hydrolase was been changed ambiguous by impact of HM. There was oppression of sour hydrolase in digestive gland and there was activation of it in gills.

Thus, HM accumulate in the soft tissues of mussels and cause tissue-specific shifts in metabolism, depending on the concentration, exposure time and chemical nature of acting agent.

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ЭКОТОКСИКОЛОГИЧЕСКАЯ ОЦЕНКА КОМПОНЕНТОВ ОКРУЖАЮЩЕЙ СРЕДЫ РЕКРЕАЦИОННОЙ ЗОНЫ ЛЕНИНГРАДСКОЙ ОБЛАСТИ

Целью работы является изучение экологического состояния почвенного покрова и воды в водоеме в рекреационной зоне п. Шапки в условиях нарастания антропогенной (туристической) нагрузки при помощи экотоксикологического подхода.