

UNIVERSITI TEKNOLOGI MARA

**HEAVY METALS IN *CATFISH* AND
TILAPIA SPECIES IN EX-MINING
AREA AND THEIR POTENTIAL
RISK TO HUMAN HEALTH**

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Project submitted in fulfillment of the requirements for
the degree of
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DECLARATION BY STUDENT

Project entitled “Heavy Metals in *Catfish* and *Tilapia Species* in Ex-Mining Area and Their Potential Risk to Human Health” is a presentation of my original research work. Whenever contributions of others are involved, every effort is made to indicate this clearly, with due reference to literature, and acknowledgement of collaborative research and discussions. The project was done under the guidance of Project Supervisor, Professor Madya Rodziah Bt Ismail. It has been submitted to the Faculty of Health Sciences in partial fulfilment of the requirement for the Degree of Bachelor in Environmental Health and Safety (Hons).

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In the name of Allah, The Most Gracious, The Most Merciful.

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ABSTRACT

Harvesting of the aquatic organism like the fish is part of the major source of protein for human kind. Nowadays many anthropogenic activities by human as illegally and continuously without proper management can contribute to increase the amount of heavy metals in the environment, especially in aquatic ecosystem which can affecting many species of plant and fish. A study to determine the level of water quality and heavy metals in fish muscle from Bestari Jaya was conducted. The water from ex-tin mining area was used as the water source in the fish pond and as the breeding site of fish for commercialized into the market. The physicochemical parameters measured were pH, temperature, dissolve oxygen (do), turbidity, chlorine and three metals namely tin (Sn), lead (Pb), and zinc (Zn). The contamination of heavy metals such as tin, lead, and zinc in the water and fish was quite dangerous. Eight water samples of water and sixty samples for fish were collected for analyzes. This study was conducted to detect heavy metal in water and fish of tilapia (*oreochromis niloticus spp*) and catfish (*clarias gariepinus spp*) by using the dry ashing with method for fish and apha method for detection of heavy metal in water. The sample of fish pellet also analyze the content of heavy metal inside that. All the heavy metal analysis by using Atomic Absorption Spectrophotometer (AAS) instrument. The detection of heavy metal in the water for the Tin concentration falls in class IV as stated in Interim National Water Quality Standard for Malaysia (INWQS) 2008. Meanwhile, the Zn concentration in water for Tilapia ponds is class III. However the water in Catfish pond classified as class IV. Lastly, Pb concentration in water samples were not detected. Meanwhile all heavy metals concentration in the muscle of fish exceeded the permissible limit according to MFA 1983 except Zn concentration which complied with that standard. The result shows the concentration of the heavy metal of the fish and water was in order of Sn > Zn > Pb. However the Hazard Index (HI) both of the sample showed less than 1, so there is no significant health effect of consuming both fish species from the ex - mining area on Bestari Jaya, Selangor.

Keyword: Ex-Mining Area, Heavy Metal, Bioaccumulation, Dry Ashing, AAS