

UNIVERSITI TEKNOLOGI MARA

**Assessment of Imazapic Residues in Surface Water
and Drainage Canal at Sawah Sempadan Ricefield
and Its Potential Health Risk**

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for the degree of

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DECLARATION

Project entitled “Assessment of Imazapic Residues in Surface Water and Drainage Canal at Sawah Sempadan Ricefield and Its Potential Health Risk” is a presentation of my original research. Wherever 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 guidance of Associate Professor Dr Hazilia Bt Hussain as project supervisor. It has been submitted to the Faculty of Health Sciences in partial fulfillment of requirement for the Degree of Environmental Health and Safety (Hons.).

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ABSTRACT

ASSESSMENT OF IMAZAPIC RESIDUES IN SURFACE WATER AND DRAINAGE CANAL AT SAWAH SEMPADAN RICEFIELD AND ITS POTENTIAL HEALTH RISK

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Introduction: Imazapic is an herbicide under imidazolinone herbicide. This group of herbicide has about the same physical and chemical characteristics. It has characteristics of low potential to volatilize. This herbicide also has low application rate and wide selectivity of cropping system. The half-life of imazapic herbicide is 232 days and it may contain crystalline silica which is a carcinogenic substance. Block C, Sawah Sempadan, Tanjong Karang was chosen as the study area due to extensive use of this herbicide.

Methodology: Total samples collected for this study was 66 samples comprise of 2 seasons. There were 6 sampling points and for each sampling points 1 liter of surface water was collected. The same sampling point was used to collect samples on day 0, 1, 3, 5, 7, 11, and 15 of herbicide application. Standard sampling method was used to collect samples from each sampling point. Then, all amber bottles were kept in the ice box with temperature less than 4°C. Next, the samples were filtered before undergoing extraction. Samples were extracted by using 500mg per 6ml SPE cartridge Bond Elut C18. Then, sample analyte was analyzed using HPLC-UV/VIS Detector with a reversed-phase column. A set of questionnaires was prepared for health risk assessment.

Results: There were 60.6% of samples detected with imazapic residue in season 1 while in season 2 it was 57.6%. Based on Mann-Whitney test the result showed the *p*-value 0.445 and Kruskal-Wallis test *p*-value 0.774. For health risk assessment calculations, hazard index for non-carcinogenic health effects of male is 0.287 and female 0.254. Meanwhile, for carcinogenic health effects hazard index of male is 9.2×10^{-3} and female 5.81×10^{-3} .

Conclusion: It can be concluded that there was presence of imazapic residues in surface water but the imazapic residues will not pose significant health hazards as indicated from the value of the hazard index.

Keywords: imazapic, surface water, risk assessment, hazard index.