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WILAWAN JANTHARAPRATHIN : REMOVAL OF MERCURY AND RECOVERY SILVER FROM DENTAL AMALGAM WASTE. THESIS ADVISOR : ASSOC. PROF. AMORN PETSOM. Ph.D. THESIS CO-ADVISOR : ASSOC. PROF. CHATCHAREE SUCHATLAMPONG. 104 pp. ISBN 974-333-057-7.

Removal of mercury and recovery of silver from dental amalgam waste was studied by first removal of mercury from dental amalgam by heating at 200 °C under vacuum for 4 hours. It was found that 88.01 % w/w of mercury can be removed from dental amalgam. The amount of mercury vapor in the working area was monitored, and found that the amount of mercury vapor was lower than standard value at 0.05 $\mu g/m^3$ of air. The second step was to recover silver metal using electrochemistry and chemical methods. The result indicated that electrochemistry could not recover silver metal from dental amalgam with high efficiency under working condition. The chemical method was performed by dissolving mercury removed dental amalgam in 35 % w/v nitric acid, followed by precipitating silver chloride with hydrochloric acid and reducing silver chloride to silver metal by zinc dust. The result indicated that 97.44% of silver metal could be recovered from mercury removed dental amalgam with 99.99369% w/w purity, which is higher than silver metal for dental application (99.99127 % w/w). Thus, this silver metal is suitable for use directly in dental application.

ภาควิชา.....INTERDEPARTMENT..... ลายมือชื่อนิสิต.....วิลาวรรณ์ จันทรประทีน.....

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