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This study is conducted to recommend suitable procedures for chemical/hazardous waste management in the Faculty of Public Health laboratory, Mahidol University. This study was divided into 3 parts: (i) observation of laboratory practices in general by using laboratory inspection checklist; (ii) study of type and quantity of chemicals in the laboratory by using chemical inspection checklist; and (iii) study of quality, quantity, treatment/disposal of chemical/hazardous waste from the laboratory.

Through observation and interview, it was found that many aspects of waste management in laboratory are needy of improvement such as housekeeping, electrical safety, fume hood, gas cylinder, personal protective equipment, emergency equipment and chemical/hazardous waste disposal. Type and quantity of chemicals used in Sanitary Engineering & Central Laboratory on the 3rd floor, Nutrition Laboratory and Atomic Absorption & Gas Chromatography Laboratory were sulfuric acid (98%), ethanol and nitric acid (65%) at 30, 12 and 10 L/year, respectively. For Capillary Ion Analyzer Laboratory, the highest amount of chemicals used were boric acid, potassium chromate and 4-methylbenzyl amine at the same value of 2.4 L/year. The daily average of total wastewater from all laboratories was 10.84 m³/d.; the pH value was 0.2-1.3 and COD concentration was 7,200-24,624 mg/L. Concentration of As, Hg, Cd, Cr, Fr and Mn were 0.001-0.022, 0.144-0.476, 0.002-1.35, 10.93-90.72, 0.016-0.521, 26.92-48.76 and 0.063-0.691 mg/L, respectively.

Presently, none of the abovemention laboratories in this study have appropriate facilities for wastewater treatment. Obviously, this creates environmental and health problems. To solve these problems, the university should have laboratory hazardous waste management system. There are many ways to minimize waste in laboratory, such as source reduction, recovery/recycling and treatment. The most common treatment method is chemical precipitation that can treat heavy metals in wastewater. The results of this study showed that the removal efficiency of heavy metals from COD analysis wastewater or laboratory wastewater was higher than 95%.