

**Project 9/2004 - Simultaneous Removal of Ammonia and COD from
Landfill Leachate using a Novel Flame Reactor**

Purpose

This paper seeks Members' approval to fund the captioned application for ECF made by the Hong Kong University of Science & Technology (HKUST).

Background

2. The funding requested by this project is \$150,000, among which \$132,000 for the salaries of a research assistant and the remaining \$18,000 for materials and consumables. The project is expected to last for 12 months.

3. The purpose of the project is to utilize the already existing landfill gases in landfill sites to treat the landfill leachates to achieve the following three goals: removal of organic pollutants, removal of ammonia, and reduction of NO_x emission from the flame. The reactor will be operated under ambient conditions. The landfill leachate does not need to be pre-heated; therefore, the capital cost of the system is low. The operating cost for the landfill leachate is insignificant because the landfill leachate gas is available at no cost.

4. According to the principal investigator (PI), the machine shop of the HKUST will provide assistance in the reactor fabrication. The wastewater characterization facilities available in HKUST will be used free of charge. Hong Kong Landfill Restoration Group Ltd (HKLRG) will provide the landfill leachates and landfill gas if necessary. Deliverables of the project will include a patent with the new technology. The PI have clarified that there is no joint venture between HKUST and HKLRG at this moment. If the results are encouraging, HKLRG expressed interests to license the intellectual property out of the project.

5. EPD has assisted to examine the proposal and remarked that the project has its practical value. However, EPD has expressed reservation in supporting the project to be funded by ECF since the results

of the projects would benefit the landfill operators only. In Hong Kong, the landfills are operated by contractors who are obliged to treat the landfill leachate to meet the discharge standard under the Design-Build-Operate contracts with the HKSAR Government. As such, EPD considered that this project should be funded by these contractors if they see the proposed technology potentially feasible and profitable.

Advice sought

6. Members are invited to advise whether the application for ECF should be supported with an approved sum of \$150,000 as detailed in paragraphs in 2 to 4 above.

Secretariat, ECF Research Projects Vetting Subcommittee
November 2004