

5. OPERATION AND MAINTENANCE

- 5.1 In selecting the type of treatment process, the designers should take due consideration of the availability of competent operators.
- 5.2 Only competent technicians should be assigned to operate the STP. The operator should be fully conversant with the recommended operating procedures as stipulated in the operation and maintenance manual.
- 5.3 If any part of the STP has to be covered, open mesh flooring should be used to allow easy visual inspection. Concrete covers should be avoided as far as possible. If concrete cover slabs have to be used, they should be liftable by two men, i.e. total weight should be less than 60 kg.
- 5.4 Screenings should be removed daily and therefore screen locations should be so designed to enable easy screenings removal. Screenings should be dripped dry and packed in heavy duty polythene bags for subsequent disposal.
- 5.5 The STP should be kept in a tidy state by good housekeeping. This includes regular hosing down and scraping the walkways, whitewashing the walls, cleaning and painting metal works, maintaining adequate lighting and ventilation etc.
- 5.6 Spare parts sufficient for 2 years operation as per manufacturers' recommendation should be provided with the equipment supply.
- 5.7 Powder type fire extinguishers and a first-aid box should be provided in an

easily accessible area in the plant. Life-buoys should be placed near deep, open liquid containing tanks.

- 5.8 An operation and maintenance manual should be submitted for approval. The copy that is to be placed in the STP should be in ring binder format with all papers laminated or enclosed in plastic. It should contain at least the following information, with an essential summary in Chinese:
- name and address of designer and contractor and date of installation;
 - process and instrumentation diagram;
 - detailed description of treatment processes;
 - control mechanism;
 - wiring diagram;
 - operating procedures for all treatment processes including likely operating problem and trouble shooting techniques;
 - routine maintenance schedule for all processes and equipment (daily, weekly, monthly, annual checklists etc.);
 - start up and shut down procedures;
 - equipment schedule with name and contact address of local agents;
 - list of spare parts provided on site and recommended stock levels at which new orders must be placed;
 - sampling and testing frequency and procedures for on-site testing;
 - emergency procedure (fire, power failure, etc.);
 - plant safety precautions;
 - sample log sheets.
- 5.9 A Chinese version of the daily work schedule, laminated or enclosed in plastic should be provided in the STP.