INDUSTRIAL WASTEWATER (PRE) TREATMENT OPERATOR CERTIFICATION PROGRAM

EXAM STUDY GUIDE

FEBRUARY 2006

I BACKGROUND

The purpose of this study guide is to help prepare an individual for the Industrial Wastewater Treatment Operator Certification exam offered by the Ohio Water Environment Association (OWEA).

What is an Industrial Wastewater (Pre)Treatment Operator Certification?

It is a voluntary certification available to any operators or supervisors of an industrial wastewater treatment or pretreatment system within the state of Ohio. Certification is being offered by the OWEA to further the organization's goal or improving water quality within Ohio and furthering the knowledge of individuals engaged in the wastewater treatment industry. Certification is offered to those individuals that have the education, experience, and can successfully display on an exam some of the pertinent knowledge required to operate an industrial wastewater (pre)treatment system as determined by the OWEA's Board of Industrial Wastewater (Pre)Treatment Operator Certification (the Board).

What are the education and experience requirements to achieve certification?

An individual must have either a high school diploma or equivalent (GED) level of education and a minimum of 1-year experience in wastewater treatment operations.

How do I sign-up to take the exam?

Each person wishing to take the exam must submit a completed application form by the stated deadline with the application fee to the OWEA's Board of Industrial Wastewater (Pre)Treatment Operator Certification (Board). The application, submittal deadline, and address of the Board may be found at the OWEA web site at www.ohiowater.org/owea/.

Please note that completion of the application requires submittal of a copy of your current facility discharge control document and a drawing of your treatment system's process flow diagram. The control document would be considered your discharge permit such as a National Pollutant Discharge (NPDES) or Indirect Discharge Permit as issued by the Ohio Environmental Protection Agency (EPA), or an Adminstrative Order or Discharge Permit as issued by the receiving sanitary sewer system. Failure to submit this information will render your application incomplete and require resubmittal.

Individuals that are approved to take the exam will be notified in writing with further directions for the date, time, location, and directions for the exam.

When and where is the exam being offered?

Visit the OWEA web site at www.ohiowater.org/owea/ to view information regarding the test date, location, and registration materials.

What must I bring to the exam?

Each individual taking the Industrial Wastewater Operator Certification Exam is required to bring at least one form of photo identification (e.g. Driver's license) and two number 2 pencils.

What am I permitted to bring to the exam?

The only items permitted into the exam are No. 2 pencils and a non-programmable calculator.

What will I be provided?

Each test booklet contains the test questions, answer sheet, two pieces of scratch paper, and a list of pertinent formulas and conversion factors.

Test Arrangement

The exam consists of a total of 150 multiple-choice questions encompassing a wide variety of topics of concern to the industrial wastewater treatment plant operator. These include safety and emergency preparedness, regulations compliance, laboratory analysis, operation and maintenance of various equipment units that may be part of a wastewater treatment operation, and treatment processes and technologies that are seen throughout industry. It is not anticipated that any one industry will utilize all of the treatment processes or equipment units presented on this part of the exam, and therefore it is strongly recommended that an individual preparing for the exam obtain and review some of the reference material presented in section III of this study guide to better prepare for these multiple choice questions.

All questions for the exam are provided by the Association of Boards of Certification (ABC). A listing of the criteria used for selection of the exam questions can be located at the ABC website (http://www.abccert.org/needtoknow.html) and selecting the link to Industrial Waste. In this "Need to Know" listing, exam questions for the OWEA Industrial Wastewater (Pre)Treatment Operator Certification corresponds to the ABC Class I operator exam.

How long do I have to take the test?

OWEA volunteers will moderate the exam with specific time limitations placed on the exam. Up to 3 hours are allotted for the exam. The specific testing hours are provided with the registration materials or on the Ohio Water Environment Association web site at www.ohiowater.org/owea/.

What is necessary to pass the exam?

A minimum score of 70 percent is required on the exam to receive certification.

II PART A – GENERAL

The exam consists of 150 multiple-choice questions, which review the operator's knowledge of a variety of aspects of system operation and compliance monitoring. The following example questions have been provided to show the type of questions that might be expected on the exam. It is recommended that an individual preparing for the exam obtain and review some of the reference material presented in section III of this study guide to better prepare for these multiple choice questions.

In order to pass this part of the exam a minimum score of 70 out of a possible 100 must be achieved.

1. Determine the mass discharge rate in pounds of zinc per day from an electroplater if the effluent flow is 8,000 gallons per day containing 2.4 milligrams per liter of zinc.
   a. 160 lbs.
   b. 0.16 lbs
   c. 1.6 lbs.
   d. 0.016 lbs.

2. When conducting a pump test, the liquid level within a 10 foot diameter tank that supplies the pump is noted to drop 6-inches in 8 minutes. What is the pump rate?
   a. 59 gallons per minute
   b. 5 gallons per minute
   c. 37 gallons per minute
   d. 16 gallons per minute

3. The purpose of air stripping in industrial wastewater treatment plants is to remove
   a. BOD
   b. Heavy metals
   c. Turbidity
   d. Volatile organic compounds

4. Positive displacement pumps should never be started against a closed valve because:
   a. They will automatically shut-off
   b. Pressures could build-up to either break the piping or damage the pump
   c. The liquid within the piping will freeze
   d. The valve may become stuck in the closed position

5. Which of the following is **not** typically given in a wastewater discharge permit?
   a. Effluent limits
   b. Monitoring requirements
   c. Treatment methods
   d. Reporting procedures

6. A metals treatment system treats an average daily flow of 12,500 gpd, with an influent zinc concentration of 5,248 ug/l. If the effluent zinc concentration is 125 ug/l and effluent pH is 8.25 S.U., what is the zinc removal efficiency?
   a. 90 percent
   b. 98 percent
   c. 41 percent
   d. 84 percent

III REFERENCE MATERIALS

1. *Industrial Waste Treatment, A Field Study Training Program* – Prepared by Sacramento State College. Two volume set covering both biological and chemical treatment processes.
2. *Treatment of Metal Wastestreams, A Field Study Training Program* – Prepared by Sacramento State College.
3. *MOP FD-3, Pretreatment of Industrial Wastes* – Water Environment Federation
4. *MOP OM-2, Preliminary Treatment for Wastewater Facilities* – Water Environment Federation.
5. *MOP 11, Operation of Wastewater Treatment Plants* – Water Environment Federation.
6. *MOP 1, Safety in Wastewater Works* – Water Environment Federation.

Item nos. 1 and 2 can be obtained from:

California State University, Sacramento
Office of Water Programs
6000 J Street
Sacramento, California 95819-2694
(916) 278-6142

Remaining Items can be obtained from:

Water Environment Federation
Publications Order Department
601 Wythe Street
Alexandria, Virginia 22314-1994
(703) 684-2400