EGLE | MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

Wastewater Treatment Classifications

Industrial/Commercial Wastewater Operator Certification Board of Examiners

A-1A (Special Classification)

Minor discharges with no treatment and limited monitoring requirements. This classification applies only to discharges where no other classification applies. Proper application for certification is required; the written examination consists of a take-home questionnaire.

Examples

- Hydrostatic testing of pipes and tanks.
- Discharge of storm water from secondary containment.
- Gravel pit used for collection and/or storage of water without requirement for solids removal.

A-1B (Plain Clarification)

Solids removal by gravity separation in a mechanical clarifier.

Examples

- Round or rectangular conventional clarifiers.
- Inclined plate clarifiers.

Note: does not include the following:

- Impoundments.
- Equalization basins.
- Stormwater basins.
- Ash ponds.

A-1D (Impoundment)

A tank, basin, or reservoir intended to hold wastewater to allow for a controlled discharge; may or may not provide settling of solids.

Examples

- Flow equalization tanks.
- Mine tailings ponds.
- Gravel pits required to provide solids removal.

Note: does not include the following:

- Basins intended to provide biological treatment.

A-1F (Land Surface Disposal)

Disposal of wastewater by means of application to the surface of the land with percolation into the ground (i.e., no under-drain).

Examples

- Spray irrigation.
- Ridge and furrow.
- Rapid infiltration basin.
- Seepage pond.

A-1G (Sub-Surface Disposal)

Tile field system used for discharge of wastewater with percolation into the ground. Does not include under-drain systems used to collect wastewater for further treatment.

Examples

- Tile field system used to dispose of septic tank effluent.
- Tile field system used to dispose of effluent from activated sludge process.

A-1H (Non-Contact Cooling Water)

Flow measurement, visual observation, sampling, and minor testing of non-contact cooling water discharges regulated by permit. Discharge of colling water that has mixed with untreated wastewater is excluded. Proper application for certification is required; the written examination consists of a take-home questionnaire.

Examples

- Discharge from heat exchangers.
- Compressor condensate.
- Cooling tower discharge.

A-1I (Storm Water Management – Industrial Site)

The control of any storm water discharge associated with industrial/commercial activity. (The management and control of the discharge from any conveyance, which is used for collecting and conveying storm water that is directly related to manufacturing, processing, handling, shipping, receiving or storage of raw materials, intermediate and finished products. Also, areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water).

A-1J (Storm Water Management – Construction Site)

The control of any storm water discharge associated with construction activities. (The management and control of storm water discharged from a construction site from the commencement of construction, [the initial disturbance of soils, i.e., clearing, grading, excavating, or other construction related activities] until the site is considered stabilized).

A-1K (Concentrated Animal Feeding Operation – CAFO)

Note: Exam no longer offered. CAFOs are not required to have a certified operator per Section 3110 of Public Act 451 of 1994, Natural Resources and Environmental Protection Act, as amended.

A-2B (Filtration of Wastewater)

Filtration of wastewater for the purpose of removing particulate materials. Specifically for rapid sand filters but may also include such processes as pressure sand filters and continuous backwash sand filters.

Note: Does not include bag filters, cartridge filters, or membrane filters.

A-2C (Air Flotation)

A wastewater treatment process for separation in which fine air bubbles are utilized to raise suspended materials to the surface where they are collected.

Note: Does not include sludge thickening processes.

A-2D (Air Stripping)

Air stripping of volatile substances from wastewater or groundwater using packed-column or tray type strippers.

Note: Does not include off-gas treatment for odor control.

A-2E (Centrifuging)

A wastewater treatment process in which a centrifuge is used to apply centripetal force to accelerate the separation of substances.

Examples

- Removal of solids from wastewater by centrifuging.
- Separation of oil from wastewater by centrifuging.

Note: Does not include thickening of sludge by centrifuging.

A-2G (Deep Well Injection)

Pressure injection of wastewater into a sub-surface formation.

B-1B (Neutralization)

A chemical treatment process whereby a wastewater is neutralized (acid and/or base addition) to achieve a pH level required to meet a discharge permit limit.

Note: Does not include pH adjustment intended for such purposes as precipitation, nitrification, or to enhance biological treatment.

B-2A (Chemical Clarification)

Coagulation and/or precipitation for solids removal from wastewater.

- **Chemical coagulation:**
  The removal of suspended solids from wastewater through the addition of polymer, ferric chloride, alum, or other coagulants added to wastewater just prior to clarification.
- **Chemical precipitation:**
  The removal of dissolved solids from wastewater by precipitation through the addition of a base, ferric chloride, alum, or other chemical agent just prior to clarification.

Examples

- Precipitation of metals from wastewater.
- Precipitation of phosphorus from wastewater.

B-2B (Ion Exchange)

A wastewater treatment process in which undesirable ionic materials in wastewater are exchange for other ions on a resin material.

Note: Does not include softening or process water or boiler

B-2C (Oil – Water Separation)

Separation of oil from water with or without chemical addition.

Examples

- Grease traps.
- Gravity oil water separators.
- Chemical emulsion breaking.
- Oil skimming.

B-2d (Ultraviolet Oxidation)

A wastewater treatment process in which ultraviolet radiation is used to oxidize organic containments.

Note: Does not include UV disinfection.

B-3B (Carbon Absorption)

Removal of organic compounds from wastewater by absorption on activated carbon.

Examples

- Includes systems in which wastewater passes through a carbon bed (liquid phase).

Note: does not include the following:

  - Systems in which organics are removed from the wastewater by air stripping and then from the air by carbon absorption (vapor phase absorption).
  - Carbon canisters used for odor control systems.

B-3C (Reduction of Hexavalent Chromium)

A wastewater treatment process in which hexavalent chromium is chemically reduced to trivalent chromium.

B-3D (oxidation of Cyanide)

The removal of cyanide from wastewater through the process of alkaline chlorination.

C-1B (Aerated Lagoons)

A man-made pond or lagoon with mechanical or diffused aeration intended to provide aerobic biological treatment.

Note: Includes wastewater treatment systems with a combination of aerated and non-aerated cells.

C-1C (Stablization Ponds)

A man-made pond or lagoon intended to provide natural biological treatment without the addition of supplemental aeration.

C-2a (Disinfection)

The chemical or ultraviolet radiation disinfection process to destroy pathogenic organisms in wastewater just prior to discharge.

Note: Does not include disinfectants added to cooling water towers or process flows.

C-2B (Trickling Filters)

An attached growth wastewater treatment process in which wastewater is distributed over a media (usually rock or plastic) which supports the biological system and is designed to convert colloidal and dissolved organic compounds into settleable sludge.

C-2C (Biological Sand Filters)

Sand filtration systems intended to provide biological treatment of wastewater as well as physical filtration.

Examples

- Intermittent sand filters.
- Recirculating sand filters.

C-2d (Rotating Biological Contactors)

An attached growth wastewater treatment process utilizing rotating plastic media designed to convert colloidal and dissolved organic compounds into settleable sludge.

C-2E (Package Plant)

Note: Exam no longer offered. Activated sludge processes are classified as C-3A or C-3B.

C-2F (Constructed Wetlands)

A man-made complex that simulates natural wetlands, intended to treat wastewater through microbial utilization and plant uptake of nutrients.

C-3A (Activated Sludge)

A suspended growth, biological treatment system designed to convert colloidal and dissolved organic compounds in wastewater into settleable sludge.

Examples

- Conventional activated sludge.
- Oxidation ditch.
- Package plants.

C-3B (Sequencing Batch Reactor)

A modification of the activated sludge process in which treatment occurs in batch mode and the reactor also serves as the secondary clarifier. The treatment sequence is largely computer controlled.