

# NONCOMMUNITY WATER TREATMENT SYSTEMS

## Guidance

### REGULATED WATER TREATMENT SYSTEMS

Water treatment systems used to remove substances (such as arsenic or nitrates) exceeding the Maximum Contaminant Level (MCL) are regulated. These are considered “treatment systems for public health purposes.”

Also, any treatment system that injects chemicals into the water is a regulated treatment system.

### UNREGULATED WATER TREATMENT SYSTEMS

When **not** used to meet an MCL, softeners, filters, activated carbon, reverse osmosis (RO), ultraviolet (UV) light, and air-injected and intermittent regeneration greensand iron removal filters are not regulated.

### REGULATED WATER TREATMENT SYSTEM REQUIREMENTS

All regulated treatment systems require:

1. A construction permit
2. A D-5 or higher-level operator
3. Monthly Operation Reports (MOR) – (See Rule 1304(1) of the Michigan Safe Drinking Water Act – Act 399.)

### CONSTRUCTION PERMIT APPLICATION PROCESS

- Water supply owner or treatment installer creates two copies of the application package (application form, plans, specifications, and operation and maintenance manual) and submits to the Local Health Department (LHD).
- Michigan Department of Environment, Great Lakes, and Energy (EGLE) may review the construction permit application in consultation with the LHD and work with the applicant to correct any deficiencies (the LHD can do a concurrent review, if desired).
- After the application package review is completed, EGLE will contact the LHD and issue a construction recommendation letter.
- The LHD will issue a construction permit letter.
- After treatment is installed, the LHD will do a final inspection. EGLE staff may assist on final inspection.
- The LHD issues final approval of the system following disinfection and satisfactory water sample results (two total coliform samples taken 24 hours apart, and one sample that is below the MCL for the contaminant being removed).

### MODIFICATION OF EXISTING WATER TREATMENT SYSTEMS

- Significant changes to existing regulated water treatment systems must be reviewed and approved by EGLE.
- Re-bedding existing treatment systems with the same volume and type of media as originally approved by EGLE can be approved by the LHD. The LHD will notify EGLE of re-bedding.
- LHD staff can request copies of EGLE treatment files for regulated treatment systems.

## APPROVED/CERTIFIED TREATMENT SYSTEMS

Anything that touches the water must be NSF/ANSI certified. NSF 61 certification is used for treatment system components and media. NSF 60 certification is used for treatment chemical certification. Water treatment units are certified to other standards (RO NSF 58, softeners NSF 44, UV light NSF 55, health effects NSF 53, etc.). These certifications show that the equipment will not leach harmful chemicals into the water and are required for regulated treatment (see Rule 2102(3)). EGLE does not review unregulated water treatment systems.

## WHAT IF THE LHD DOESN'T HAVE A PERMIT OR RECORDS FOR AN EXISTING TREATMENT SYSTEM?

The owner shall contact their LHD to discuss the following information:

1. The type of water treatment system (including make/model).
2. The purpose of the system.

When in doubt, take photos, write down the make/model and email the LHD for guidance.

## WHO TO CONTACT WITH QUESTIONS

Water supply owners and certified operators should contact their LHD. LHDs should contact their EGLE area representative.

## WATER TREATMENT SYSTEMS QUICK REFERENCE GUIDE

Type of Treatment	General Purpose	How it Works	Regulated (Construction permit, certified operator, and monthly operation reports are required.)	Cross Connection Control
Cation Exchange (Softeners)	Removes hardness and iron	The calcium and magnesium ions in the water are replaced with sodium or potassium ions.	No	Air gap on wastewater line
Anion Exchange	Removes nitrate or arsenic	The nitrate or arsenic ions in the water are replaced with chloride ions.	Yes	Air gap on wastewater line
Chlorine Injection	Disinfection or oxidation	Oxidizing agents are used to convert dissolved iron and other ions to a solid form that can be filtered out.	Yes	Air gap on wastewater line
Greensand Iron Removal with Chemical Injection	Removes iron, manganese, arsenic, hydrogen sulfide	Manganese, iron, etc. are oxidized and precipitated by contact with an oxidizing agent and then filtered out with greensand media.	<b>Yes</b> , if continuous regeneration where oxidation chemicals are injected before the filter. <b>No</b> , if intermittent regeneration where the oxidation chemical is used only in the backwash cycle for media regeneration.	Air gap on wastewater line
Greensand Iron Removal with Air Injection	Removes iron, manganese, arsenic, hydrogen sulfide	Manganese, iron, etc. are oxidized and precipitated by air injection and are trapped in the sand and held there.	Yes, if used to reduce an MCL	Air gap on wastewater line

Type of Treatment	General Purpose	How it Works	Regulated (Construction permit, certified operator, and monthly operation reports are required.)	Cross Connection Control
Phosphate or Silicate Injection	Corrosion control	Phosphate and silicate coats piping walls to isolate aggressive water. Chlorine is injected with phosphate to prevent bacterial growth.	Yes	Air gap on wastewater line
Reverse Osmosis (RO)	Removes nitrates, arsenic, calcium, iron, metals, dissolved solids, organics, viruses	Water is pressurized and passed through a semi-permeable membrane.	Yes, if used to reduce an MCL	Air gap on wastewater line
Activated Carbon	Removes odors, taste, chlorine, and organics	Impurities are absorbed as they pass through a carbon cartridge.	Yes, if used to reduce an MCL	NA
Ultraviolet (UV) Light Disinfection	Disinfection	Ultraviolet light disinfects the water or reduces the amount of bacteria present in the water.	No	NA
Cartridge Filters	Removes particulates; taste and odor control	Water is forced through a fiber filter and sediment is trapped in the filter.	No	NA
Calcite Media	pH adjustment for corrosion control of piping and fixtures	Acidic water slowly dissolves the calcium carbonate to raise the pH.	Yes	NA
Ozone	Disinfection or oxidation	Manganese, iron, etc. are oxidized and then removed by post-filtration.	Yes	Air gap on wastewater line

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