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September 20, 2024

Melissa Criswell, Vice President/Chemical Division
Norweco, Inc.
220 Republic Street
Norwalk, OH 44857

RE: Product Submittal – Notice of Bacteriological Reduction Product Listing Description:

Sewage Treatment System, Ultraviolet Disinfection
Manufacturer: Norweco, Inc.
Product Name: AT 1500 UV System
Model Numbers: AT 1500 (Design Flow of 500, 1000, 1500 GPD)
Product Listing: Category A (residential sewage)

Dear Melissa Criswell:

Thank you for your application for product registration for the Norweco AT 1500 Ultraviolet (UV) Disinfection System, which was tested by North American Testing, LLC using NSF Standard 385 with a device daily flow capacity of 500 gallons per day and a maximum flow rate of 1.5 gallons per minute.

In accordance with Minnesota Rules Chapter 7080 through 7083, the Minnesota Pollution Control Agency (MPCA) has reviewed Norweco's submitted materials for Category A (residential) Bacteriological Reduction product listing. Our review of the AT 1500 UV system indicates it meets the requirement for bacteriological reduction treatment product registration.

The AT 1500 UV System is considered a Category A (designed to treat residential sewage) Bacteriological Reduction product in the state of Minnesota that meets the following treatment levels:

- **Treatment Level A** Fecal coliform of 1,000 colonies per 100 ml
- **Treatment Level B** Fecal coliform of 10,000 colonies per 100 ml

The AT 1500 UV Disinfection Unit is registered with a design rated capacity of 500, 1000 and 1500 gallons per day per unit, as shown in Table 1.

Subject to this determination, the AT 1500 Series, will be placed on the List of Registered Bacteriological Reduction Products. The product information listed in this Notice of Proprietary Product Listing will be maintained on the MPCA website and may not be altered or misrepresented by the manufacturer or any other person without permission by the MPCA.

Table 1. AT 1500 UV Disinfection System

Product Name Model	Treatment Process	Design Flow (gpd)	Highest Treatment Level	Important Product Use Information
AT 1500 UV System	Bacteriological Reduction	500	A	<ul style="list-style-type: none"> • Notice of Product Listing <ul style="list-style-type: none"> • MPCA Letter • Conditions of Registration • Expiration Date • AT 1500 UV System Manual <ul style="list-style-type: none"> • Submitted Drawings • Known Limitations • Installation • Operation & Maintenance • Owners Information • Regulators Checklist • Service Contract • Management Plan for AT 1500 UV System • Operating Permit Template
Two (2) AT 1500 UV Systems in parallel	Bacteriological Reduction	1000	A	
Three (3) AT 1500 UV Systems in parallel	Bacteriological Reduction	1500	A	

*Flow rates must not exceed 1.5GPM per unit

The registration of products in Minnesota is contingent upon compliance with the following conditions:

1. Products must be used in compliance with the MPCA rules and the plans and design specifications provided. Any deviation from the plans and specifications shall not be permitted unless authorized by the National Sanitation Foundation (NSF) and, in writing, by the MPCA for registered use.
2. The manufacturer shall have readily accessible information, specific to a product's registered use in Minnesota, for designers, installers, regulators, systems owners, and service providers for the following items: a) product manual, b) design instructions, c) installation instructions, d) operation and maintenance requirements, e) homeowner instructions, and f) list of manufacturer-certified service providers, if any, as required by Minnesota Rules Chapter 7083.4040 (H).
3. The design flows for the registered AT 1500 UV System are as follows:
 - 500 gallons per day for 1 AT 1500 UV System
 - 1000 gallons per day for 2 AT 1500 UV Systems
 - 1500 gallons per day for 3 AT 1500 UV Systems
 - Maximum flow rate is 1.5 gallons per minute for each unit
4. Each system must be delivered with an installation manual and owner's manual for the AT 1500 UV disinfection unit. Each component must be installed in accordance with the manufacturer's installation manual.

5. Norweco, Inc., along with the Intermediate/Advanced Designer and Installer, are responsible to ensure that proper flow splitting devices are used in splitting flows to AT 1500 UV disinfection units. Flow splitting devices must meet the following criteria: a) designed specifically and reliably to split wastewater flows; b) accessible for on-going operation and maintenance; c) monitored to determine flow rates; d) adjustable after construction should settlement occur; and e) have infinite or continuous adjustment features.
6. Each system shall be equipped with a sufficient number of AT 1500 UV disinfection units to achieve Treatment Level A as follows: 1) One (1) AT 1500 UV disinfection unit for design flows of 500 gallons per day; 2) Two (2) AT 1500 UV disinfection units, in parallel, for design flows of 501–1000 gallons per day; 3) Three (3) AT 1500 UV disinfection units, in parallel, for design flows of 1001-1500 gallons pr day. Flow to each AT1500 UV disinfection unit shall not exceed 1.5 gallons per minute to ensure adequate disinfection prior to soil dispersal.
7. As specified in the 'Model AT 1500 UV Disinfection System Installation and Operation Manual,' a dedicated circuit of the proper size is needed in the main electrical panel for the UV disinfection system.
8. All systems shall be designed and operated with a suitable alarm device should the AT 1500 UV disinfection unit malfunction.
9. Systems may only be designated as Type IV systems if designed and installed per the drawings submitted with the Application for Product Registration, initially submitted July 2, 2024, and any other subsequent documents submitted prior to this registration.
10. Influent limits prior to the AT 1500 UV disinfection unit must be as follows:
 - a. CBOD5 concentration shall be ≤ 25 mg/L for Treatment Level B, ≤ 15 mg/L for Treatment Level A
 - b. Total suspended solids concentration shall be ≤ 30 mg/L for Treatment Level B, < 15 mg/L for Treatment Level A
 - c. E. Coli population shall be between 100 and 1,000,000/ 100mL
 - d. Fecal coliform populations shall be between 10,000 and 100,000,000/100mL
 - e. pH shall be between 6.0 to 9.0 S.U.
 - f. Temperature shall be between 6 and 30 degrees Celsius
 - g. UV Transmittance shall be between 50% and 75%
11. As a Type IV system, the system must be constructed and operated under the required local permits.
12. The level of maintenance required for AT 1500 UV disinfection components shall be as specified in the products Operation and Maintenance Manual. This includes, but is not limited to, maintenance every six months. Each AT 1500 UV lamp shall be replaced at least once every two (2) years to ensure proper disinfection or more often as needed, to achieve the required fecal coliform bacteria treatment level.
13. For systems registered as meeting the requirements for Treatment Level A and B, testing for fecal coliform bacteria is required per the local operating permit when reduced vertical soil separation is employed.

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14. The manufacturer is responsible to provide a listing of known limitations, made available on the company's website or other means.
15. Training shall be provided to MPCA-licensed Subsurface Sewage Treatment System practitioners before designing, installing, or providing service AT 1500 UV disinfection device registered for use in Minnesota.
16. During the period of product registration and as part of the renewal process, systems using registered treatment products are subject to an audit by the MPCA.

Please be advised that this registration expires December 31, 2027. Manufacturers desiring to continue product registration beyond this date must obtain MPCA renewal according to the requirements in Minnesota Rules Chapter 7083.4040 (E). If the product has changed or is retested according to the protocol required for registration, renewal shall be based on the most recent test results. If the MPCA finds the product has changed in any way that may affect performance, it may not be renewed and must meet the requirements for initial registration.

The MPCA is in no way endorsing these products or any advertising, and is not responsible for any situation which may result from its use or misuse. The MPCA is not liable for any product failure and these statements are not intended and cannot be relied upon to establish any substantive or procedural rights with the state of Minnesota or the MPCA, either express or implied, that can be enforced in litigation or any administrative proceeding.

If you have any questions, please contact Wendy Chirpich at 507-344-5248 or by email at wendy.chirpich@state.mn.us.

Sincerely,

Wendy Chirpich

This document has been electronically signed.

Wendy Chirpich
Environmental Specialist
Municipal Division

WC:lm