

Proprietary treatment technology registration guidance – high strength waste

Options for product registration, submittal requirements, testing, and renewal

This document establishes a standardized process for registering proprietary treatment technology products capable of treating high strength waste (HSW) when septic tank effluent is anticipated to be greater than treatment level C (Table III, part 7083.4030), including restaurants, grocery stores, mini-marts, group homes, medical clinics, residences, etc. At the time of this publication, 2021, there is no nationally established testing protocol for HSW products in operation; however, the Minnesota Pollution Control Agency (MPCA) requires an interim protocol to verify the operational performance of proprietary treatment technologies intended for use in Minnesota until implementation of a national standard satisfying the requirements of Minn. R. 7083.4010 is created. The alternative to developing an interim prescriptive process for registration of proprietary treatment technology products capable of treating HSW is to require a licensed* Minnesota professional engineer to design Type V SSTS for all impacted facilities. The following information will inform proprietary treatment technology manufacturers of the expectations for product submittals to the MPCA and identifies outcomes the MPCA's registration program seeks to achieve. Failure to adhere to this protocol will result in revocation of registration as a proprietary treatment technology in Minnesota. Future installations would then be permitted only as type V SSTS or under a State Disposal System permit until such time that the HSW registration protocol requirements below are met.

*Minnesota professional engineer licensure is managed by the Minnesota Board of Architecture, Engineering, Land Surveying, Landscape Architecture, Geoscience and Interior Design (AELSLAGID).

Registration options for HSW proprietary treatment technologies

There are two registration categories for HSW proprietary treatment technologies – conditional registration and full registration.

Conditional registration

This registration protocol allows HSW proprietary treatment technology installation while requiring collection of field data from Minnesota verifying the product's operational performance. Those wishing to register a HSW proprietary treatment technology are required to submit a signed Proprietary Treatment Product Application for Registration. In addition to the application, manufacturers must also submit:

- A High Strength Waste Registration Addendum, containing engineering designs and calculations for treatment products/models, signed by the manufacturer's authorized Professional Engineer. The manufacturer can identify information as 'non-public' and submit a formal request to the MPCA.
- Testing Information, that supports the submitted engineering designs and calculations (above); products will be listed as meeting current Treatment Level C (septic tank effluent of 125 mg/l CBOD₅ [170 mg/l BOD₅], 60 mg/l TSS, 20 mg/l O&G). No credit will be given for reduced soil vertical separation or reduced system size for Treatment Level C.

- National Sanitation Foundation (NSF) testing results if the product has been tested under NSF 40, 245, 46, 350, or 385 protocols. The aforementioned protocols, while not specific to HSW, will provide information on system performance, expectations, maintenance, and management.

Conditionally registered products are granted a three (3) year timeframe for products to be installed and tested for performance in Minnesota. Maintaining a conditionally registered status requires product manufacturers to submit data, in accordance with this protocol, for all systems installed in Minnesota from the effective date indicated on their registration letter. The Technical Advisory Panel (TAP) may, after review of submitted data, modify, expand, alter, or cancel the requirements for data collection on specific installations. Manufacturers will continue to collect and submit the required data under this protocol until the TAP determines the product manufacturer has demonstrated satisfactory product performance, the product manufacturer obtains full product registration via national standardized testing, or cancellation of registration in Minnesota occurs.

Previously registered HSW proprietary treatment technologies

HSW products registered prior to the date of this guidance (see footer) will be required to follow this updated protocol at the time of their next product renewal. Requirements of the new protocol will be communicated with each manufacturer and reflected in the renewal registration letters of each product. Once previously registered products transition to following the updated registration protocol all subsequent renewals will occur following the renewal requirements located herein. The number of previously installed systems that will be required to test under this protocol will be determined at the time of renewal with consideration given to the number of systems installed within the previous three-year renewal period.

Conditional registration renewal requirements

At the time of product renewal, every three years, manufacturers must submit data in accordance with the HSW verification protocol for each system installed under this protocol. If product manufacturers fail to submit data as outlined in the HSW verification protocol for each system installed their registration will be discontinued until submission of the required data. Renewal requirements as stated in this guidance will be communicated to manufacturers in a letter from the MPCA prior to their expiration deadline. Product manufacturers must submit renewal materials as specified in their renewal letters.

HSW verification protocol

An established set of requirements to verify product performance is necessary to set a consistent standard among all registered HSW treatment technologies. This protocol (table 1) requires quarterly sampling on every system installed after registration, in perpetuity, until such time that the TAP modifies, expands, alters, or cancels the protocol requirements.

Table 1. HSW verification protocol

Item	Description
Sample identification	Third-party sample reports must clearly indicate from which system/facility the samples were derived. Reports must also contain sample dates and times, sample location information, name of sampler, chain of custody information, sample collection method, and sample transportation information (time/container/temperature).
Sampling intervals	Four (4) sampling events (for both influent and effluent analysis as described below) must be taken quarterly each calendar year. The TAP will consider alternate intervals on seasonal use facilities to ensure required sampling events align with peak usage. Example: Q1: Jan – Mar, Q2: Apr – Jun, Q3: Jul – Sep, and Q4: Oct – Dec.
Influent Sampling	Influent BOD ₅ , TSS, and O&G composite/grab samples must be taken at the first location of sewage collection within the system and be representative of the waste being discharged from the facility. Each of these three constituents must be sampled at each sampling event per facility.

Influent waste characterization	For each set of influent data provided, the waste must be characterized as HSW in accordance with Minn. R. 7080.1550 Subp. 2 B (1). Raw sewage must exceed 300 mg/L BOD ₅ , 200 mg/L TSS, and/or 50 mg/L O&G in order to be considered high strength waste.
Effluent sampling	Effluent cBOD ₅ (or BOD ₅), TSS, and O&G composite/grab samples must be taken after the treatment device and before discharge to the soil dispersal area. Each of these constituents must be sampled for each sampling event per facility.
Effluent waste results	In all cases, the effluent waste concentrations must meet, at a minimum, the outlined parameters for Treatment Level C: BOD ₅ of 170mg/L (or cBOD ₅ of 125mg/L), TSS of 60mg/L, and O&G of 25mg/L.
Flow measurements	Daily flow for thirty (30) days prior to each sampling event must be provided.
Third-party testing	All sampling results must be submitted on original reports from third-party entities (e.g. certified laboratories).
O&M summary	Create an O&M summary specifying the maintenance performed throughout the test period, such as pumping events or adjustments made, and include a list of tasks necessary for the product to adequately perform within the specified parameters in all configurations. Tasks should be given a specific frequency for when each shall occur (e.g. every 6 months).
Summary report	Items 1-5 below shall be prepared in order for each system/facility: <ol style="list-style-type: none"> 1. Cover page with facility name, address, product model, and design flow 2. Influent results 3. Effluent results 4. Flow measurements 5. O&M summary Combine the summary reports for each system/facility into one PDF document, and submit to the agency

Full registration

A product will be granted full product registration once the manufacturer completes the Proprietary Treatment Product Application for Registration, undergoes formal review, and is verified through nationally recognized testing protocols in accordance with Minn. R. 7083.4010. Renewal for full registrations will be every three (3) years.

Final review and determination

The TAP will provide review of the summary reports submitted, and make recommendations to the agency for conditional or full product registration. The TAP has full discretion in their recommendations based on the intricacies surrounding each product's situation and registration at the time of review. Based on the recommendation from the TAP, the agency will make a final determination and develop a product registration letter reflecting their registration parameters and requirements.

Contact

For any questions, please call the MPCA at 651-296-6300 or visit the product registration webpage at <https://www.pca.state.mn.us/water/ssts-product-registration-process>