Department Standards and Guidance for Performance, Application, Design, and Operation & Maintenance

Holding Tank and Incinerator Sewage Systems

February 2025

Washington State Department of HEALTH

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Summary of Changes

Page Number	Section	Description of Change
Pages 10 - 19	Section 1	Formatting changes to section 1

Pages 20 - 26	Section 2	Added new section for Incinerators

Glossary of Terms: A glossary of common terms for all DS&Gs can be found on the department web site at www.doh.wa.gov/Portals/1/Documents/Pubs/337-028.pdf.

Preface

This Department Standard and Guidance (DS&G) is applicable for statewide application. Regional differences may require variations in the application of the technology. The differences may also create a need for greater or more restrictive allowances than those described here. In either case, the local health officer has full authority in the application of this technology, consistent with Chapter 246-272A Washington Administrative Code (WAC) and local code. If any provision of these recommended standards is inconsistent with local codes, regulations, ordinances, policies, procedures, or practices, the local standards take precedence. Local application of these recommended standards may be:

1) **Adopted as part of local rules, regulations, or ordinances.** When the recommended standards, either as they are written or modified to reflect local conditions more accurately, are adopted as part of the local rules, their application is governed by local rule authority.
2) **Referred to as technical guidance in the application of the technology**. The recommended standards, either as they are written or modified to reflect local conditions more accurately, may be used locally as technical guidance.

Application of these recommended standards may combine the two approaches above. The local health officer and board of health dictate the application of these recommended standards without deviating from Chapter 246-272A WAC.

The typical rule language provided here assists local health jurisdictions wanting to adopt these recommended standards in local rules. Additional information and guidance are presented in text boxes to distinguish it from the recommended standards.

Glossary of Terms: The Washington State Department of Health (the department) website provides a glossary of common terms for all DS&Gs at http://www.doh.wa.gov/Portals/1/Documents/Pubs/337-028.pdf.

The recommended standards found here support the design of on-site sewage systems (OSS) with design flows less than 3,500 gallons per day (GPD) but may also be applied to large on-site sewage systems (LOSS). However, some provisions for LOSS are not appropriate or allowed with the 2011 adoption of the revised LOSS rule, Chapter 246-272B WAC. The LOSS requirements from the DS&G have already been included in the rule. Design engineers and others interested in LOSS should consult the rule and LOSS program staff.

Typical DS&G Organization:

Standards Section	Explanation
Performance	Describes performance expectations, including treatment levels and function.
Application	Details how to apply the technology and includes conditions required prior to proceeding with design (includes “approved” status of the technology, component listing requirements, permitting, installation, testing and inspection requirements, etc.).
Design	Outlines design and construction requirements for the technology, including minimum standards that must be met to obtain a permit.
Operation and Maintenance	Explains operation and maintenance requirements for the technology, including responsibilities of various parties, recommended maintenance tasks and frequency, assurance measures, etc.
Appendices	Provides design examples, figures and tables, specific applications, and design and installation issues.

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Section 1: Holding Tank Sewage Systems

Introduction

Holding tanks are allowed under special circumstances as specified in WAC 246-272A-0240.

A holding tank sewage system (HTSS) is an alternative to a conventional on-site sewage system (OSS) with special and limited applications. It is an OSS that incorporates a holding tank, the services of a sewage pumper/hauler, and the off-site disposal and treatment of the sewage. This option provides a means to collect and temporarily store sewage from a structure or dwelling in emergencies or limited repair situations.

The cost of sewage pumping, hauling, and disposal at an approved facility can be high. Costs vary based on the structure served and site-specific circumstances. In addition, the potential for operational/management problems resulting in public exposure to raw sewage is significant. For this reason, the use of an HTSS must be closely regulated by the local health jurisdiction (LHJ).

Performance Standards

HTSS must provide safe and adequate temporary storage of sewage, with scheduled and approved pumping service followed by approved off-site treatment and disposal of the stored sewage. They cannot contaminate ground or surface waters, expose the public to untreated sewage, or be a source of nuisance odors.

Application Standards

Permitting

Before installing and using a HTSS, a permit addressing installation, operation and maintenance must be issued by local health jurisdiction. The permit should include specific information and requirements for pumping service frequency and approved disposal of holding tank contents. The LHJ may permit HTSS only in the following cases:

Emergency Use

Emergency situations, regardless of source of the sewage, either commercial or residential. Emergency situations are limited to those where an approved repair or replacement sewage system installation is delayed due to weather conditions, and/or weather-induced soil or site conditions.

Permanent Use

1. Controlled, part-time, commercial usage situations, such as recreational vehicle parks, trailer dump stations, campgrounds, marinas, etc. Or;

2. Repair of failing OSS, but only where no other option is feasible. The LHJ must first determine that the following options are not feasible:

    a. Conventional on-site sewage system;

    b. Conventional on-site sewage system with off-site drainfield;

    c. Alternative on-site sewage system with enhanced treatment prior to disposal to the receiving soils;

    d. Connection to a publicly or privately, owned large on-site sewage system;

    e. Connection to public sewer; or,

    f. Connection of an effluent pump to a public sewer.

Siting

The holding tank portion of the holding tank sewage system must be located in such a way as to facilitate pumping while limiting the general public exposure to, or nuisance caused by, accidental sewage spillage during pumping.

The holding tank sewage system must meet the same horizontal setbacks required for sewage tanks by WAC 246-272A-0210, (Location).

Table 1: Minimum Horizontal Separations

Items Requiring Setback	*From sewage tank and distribution box*
Well	50 ft.
Public drinking water well	100 ft.
Public drinking water spring measured from the ordinary high-water mark	200 ft.
Spring or surface water used as drinking water source measured from the ordinary high-water mark	50 ft.
Pressurized water supply line	10 ft.
Decommissioned well (decommissioned in accordance with chapter 173-160 WAC)	N/A
Surface water measured from the ordinary high-water mark	50 ft.
Building foundation/in-ground swimming pool	5 ft.
Property or easement line	5 ft.
Interceptor/curtain drains/foundation drains/drainage ditches	

Down-gradient: Up-gradient:	 5 ft. N/A
Other site features that may allow effluent to surface Down-gradient: Up-gradient:	 5 ft. N/A
Down-gradient cuts or banks with at least 5 ft. of original, undisturbed soil above a restrictive layer due to a structural or textural change.	N/A
Down-gradient cuts or banks with less than 5 ft. of original, undisturbed, soil above a restrictive layer due to a structural or textural change.	N/A
Other adjacent soil dispersal components/subsurface stormwater infiltration systems	N/A

Installation

Holding tank systems must be installed according to the design approved by LHJ in accordance with the local health jurisdiction's permit requirements.

Inspection

The HTSS installation must be inspected by the system designer and the LHJ before use. The LHJ may inspect various items, including, but not limited to, the following:

1. Non-buoyancy in high groundwater areas or conditions;
2. Watertightness of the tank, tested at site after installation, by filling with water;
3. Leak-proof nature of the service access(es), access ports, risers, lids, and covers;
4. Methods to secure the lids and covers from inappropriate or unapproved access;
5. Methods of venting provided by the design and installation. Venting should exhaust above the roof line of the building;
6. Equipment and methods for cleaning sewage spills; and
7. Alarm functions.

Design Standards

Tank Design/Material Requirements

Holding tanks must be on the department's *List of Registered Sewage Tanks*.

Holding tanks must be:

- Designed, constructed, and installed to maintain watertightness; and
- Designed, constructed, and installed to withstand anticipated stresses associated of use which includes resistance to effects of raw sewage, and ability to withstand internal and external loading.

If buried, the tank:

- Must be inherently non-buoyant so as to prevent floating when empty during high groundwater periods if such events are anticipated. A tank is non-buoyant if installed above the groundwater elevation, weight of the empty tank exceeds buoyant forces, or “side wings” anchor the tank into surrounding soil;
- Must be able to withstand traffic loading if the area is subject to vehicular traffic loads; and,
- May be pre-cast or cast-in-place concrete, fiberglass or polyethylene.

If installed above-ground, the tank:

- Must be designed and constructed to function as needed, retain shape, integrity, and watertightness.
- Must provide adequate support for all associated piping; and
- May be concrete, fiberglass, or polyethylene.

Sizing

Establishing the holding tank capacity requires consideration of both design and operation. The required storage capacity depends on daily sewage flow (design) and available or optimal pumping service frequency (operation).

Daily Sewage Flow

Minimizing daily sewage flow is prudent. If the structure is to be permanently served by the holding tank sewage system, water-saving fixtures and processes must be used where possible structure. Use the same daily design flow estimates as for a conventional OSS (see WAC 246-272A-0230).

Pumping Service Frequency

Establishing required pumping service frequency depends on various conditions:

1. Where structure use or wastewater generation is low and service response is good, an "on-call" operation may be acceptable.
2. When structure use or wastewater generation is high, regularly scheduled pumping service is required. The scheduled pumping frequency depends on the holding tank(s) storage capacity, the hauling volume capacity of the service vehicle, proximity of a permitted disposal site, travel time and potential service costs.

Holding Tank Sizing Criteria

Tank sizing consists of two calculations, called normal operating volume (NOV), and reserve storage volume (RSV). Both are typically expressed in gallons.

The NOV is the liquid storage below the "time-to-pump" alarm level. The required NOV is calculated by multiplying the estimated daily sewage flow by the number of days between pumping service visits. The calculation for NOV is:

NOV = DSF*PSF

Where:

DSF = Daily sewage flow (gallons)

PSF = Pumping service frequency (number of days between pumping, not to exceed 7 days)

The RSV is the liquid storage capacity above the "time-to-pump" alarm level and below the invert of the inlet pipe. The reserve storage volume must be at least 3 times greater than the anticipated daily design flow for the structure. There may be special cases where three-day reserve storage is insufficient, in which case additional reserve storage should be addressed by the design. The calculation for RSV is:

RSV = DSF*3

Where:

DSF = Daily sewage flow

The total liquid volume capacity (TLVC) includes the NOV plus the RSV and is expressed in gallons. It can be met with multiple holding tanks. The calculation for TLVC is:

TLVC (gal) = NOV + RSV

A Sample Calculation

An HTSS is being designed for a small marina with a DSF of 500 gallons. It will be serviced once a week. How much TLVC is needed to meet the structures' needs?

Example:
NOV is 7 times the daily design flow because a week is 7 days, therefore:
*NOV = 500*7*
NOV = 3,500 gal

Since RSV must be three times greater than the daily design flow, it is multiplied by 3:
*RSV = 500*3*

RSV = 1,500 gal

The TLVC of the holding tank(s) must include both the NOV and RSV so these values are added together:

TLVC = NOV + RSV
TLVC = 3,500 + 1,500
TLVC = 5,000 gal

Alarms

Both audible and visual alarms are required. Alarms must be set to signal at the "time-to-pump" and "exceeding reserve storage volume" levels.

The audible and visual alarm enunciators must be located outside the structure with battery power where electrical power is not available.

Only the audible alarm may be turned off by the user.

Piping

Plumbing connections must be watertight so if the holding tank is full, further use of the system causes sewage to back up into fixtures in the structure. Exceeding rated tank capacity must not allow discharge of sewage to the ground surface through the service access, pumping access ports, or vent openings.

Gravity flow to tank

Conventional plumbing requirements apply.

Pressure flow to tank

Pump activation and deactivation must be double controlled by float switches within the pump chamber and holding tank. It cannot be solely controlled in the pump chamber. This is intended to prevent pumping excess sewage to the holding tank.

Multiple tank installations

Piping and all connections must be watertight and securely bedded and backfilled to prevent groundwater infiltration and sewage exfiltration.

Cold climates

In areas where freezing is a concern, all piping must be adequately protected by design and installation.

Aboveground tank installations

These create potential for physical damage to piping and tanks. Whenever piping is above ground or exposed, it must be adequately protected. Where multiple, interconnected tanks are installed, connections must be connected by differential settling using a common slab, flexible connections or bedding.

Venting and Odor Control

Gravity Flow to the Holding Tank

Separate venting directly from the holding tank is not required since the holding tank will vent through the building sewer line. However, special care is necessary to assure pumping and service access port lids are leak-proof so all sewage gases will vent through the structure waste vent pipes.

Pressure Flow to the Holding Tank

Direct venting of the holding tank is required since gases will not adequately vent through the pressurized line from a sewage pump. Vent pipes should terminate high enough and far enough away from areas of human activity to avoid vent stack odors and related nuisances. To assure sewage gases vent through the vent stack, pumping and service access port lids must be leak-proof.

Overflow Provisions

The HTSS must be designed and installed such that no overflow is allowed, other than within the structure at the elevation of the lowest fixture served.

Surface Water

Landscaping adjacent to the HTSS should direct surface water flow away from the tank and access points.

Materials

Construction materials used throughout the HTSS must function as designed while being exposed to sewage, sewage gases, and physical forces caused by repeated tank filling and pumping.

<u>Operation and Maintenance Standards</u>

Pumping and Service

An HTSS requires regular pumping and servicing. To assure this can be done efficiently, the system must be designed, installed, and maintained in a way which promotes ease of access for pumping and cleanup.

Service access must:

1. Be supplied for each compartment or separate tank;
2. Be at or above ground surface; and
3. Have a minimum inside diameter or square dimension of 20 inches

Pumping access ports:

1. May be used in lieu of additional service access where additional access points are needed to efficiently pump the tank(s) and used in addition to service access.
2. Must have a minimum inside diameter or square dimension of 10 inches.

Tanks greater than 2,000 gallons must have multiple access points. Service access or pumping access ports must allow for efficient pumping of all contents.

Secure covers must be used for all access points located at or above the ground surface to prevent inappropriate or unapproved access.

All covers must be leak-proof to prevent infiltration or exfiltration of liquid or the escape of nuisance odors or hazardous gases.

Pumping Service Contracts

The prospective HTSS owner must submit documentation to the LHJ before a permit can be issued for installation of an HTSS. Documentation must demonstrate proof of:

1. Service contract with a certified and licensed sewage system pumping firm;
2. Frequency of pumping, by schedule or call-for-service;
3. Financial guarantee for operation, such as a bond or an assignment of funds, in the dollar amount specified by the LHJ or operation by a public agency. It is suggested that financial guarantee be at least equal to the cost of one year's service, and/or the estimated cost of cleanup and abatement of a sewage spill.

Operational Permit

The health officer must require an annual operational agreement and may collect fees to oversee operations of the HTSS. The operational agreement must demonstrate the following as a minimum:

1. Pumping, hauling, and disposal must be by a sewage pumping contractor certified, licensed, and approved by the health officer;
2. Disposal of sewage must be at a site, or sites approved by the health officer in the jurisdiction where the sewage is disposed;
3. Operational records must be maintained by the owner and pumper, which include information about pumping frequency, sewage volume, disposal site(s), proof of acceptance by the disposal site operator, alarms, and system servicing and repairs;

4. Copies of operation records must be submitted to the health officer according to permit requirements;
5. An emergency response plan that addresses possible failure of a pumper to provide service, hydraulic overload of the system, sewage spill at the site.

Disposal of Contents

Contents in the HTSS must be pumped, hauled, and disposed of in a manner approved by the LHJ.

Sewage from the HTSS cannot be applied to the ground surface, into ground water, or disposed of into surface waters.

Sewage from an HTSS may be disposed of:

1. In an approved incinerator system as outlined in Section 2 of this document, or;
2. Into the septic tank of a permitted on-site sewage system, with the knowledge and consent of the local health officer; or
3. At a wastewater treatment facility approved by the Department of Ecology; or,
4. At/In other treatment and disposal sites approved by the health officer.

Large On-Site Sewage Systems (LOSS)

On-site sewage systems serving facilities with daily design flows between 3,500 and 14,500 gallons per day are permitted under the authority of the department, except in counties where this program is operated by the local health jurisdiction under contract with the department. In all cases the department requirements must, at a minimum, be met.

Requirements for LOSS

Application, engineering, design, construction, inspection, and operation and maintenance requirements for large on-site systems are contained in the Washington State regulations for LOSS (design flows greater than 3,500 gpd), WAC 246-272B: Large On-site Sewage Systems.

A HTSS may not be used for any new residential development or expansion of residential development.

A HTSS may only be installed for:

1. Permanent uses must be limited to controlled, part-time, commercial usage
2. Short term uses in case of emergency situations like LOSS failures
3. As a repair when discharge to a LOSS drainfield is no longer feasible

An owner proposing a HTSS shall hire a design engineer to prepare a design consistent with department's recommended standards and guidance for HTSS.

Section 2: Incinerator Disposal Systems

Introduction

An incinerator is a self-contained unit that reduces human created wastewater to ash and evaporates the liquid portion. Black and grey wastewater are deposited into a permitted holding tank sewage system (HTSS) (see Section 1) with a macerating pump and dosing control floats. The pump then disposes the wastewater directly into the combustion chamber of the incinerator unit, which is incinerated upon a signal. The process is fueled by liquid propane (LP) or natural gas, fuel oil, gasoline, diesel, or electricity.

Chapter 246-272A-0010(62) of the Washington Administrative Code (WAC)(effective April 1, 2025) defines an "On-site Sewage System" (OSS) as “an integrated system of components, located on or near the property it serves, that conveys, stores, treats, and/or provides subsurface soil treatment and dispersal of sewage. It consists of a collection system, a treatment component or treatment sequence, and a soil dispersal component. An on-site sewage system also refers to a holding tank sewage system [HTSS] or other system that does not have a soil dispersal component.”

Incinerators and HTSS fall under the final point of the definition as a “system that does not have a soil dispersal component”.

Performance Standards

All proprietary incinerator units must be approved for use in Washington State. Approved products are on the department’s published *List of Registered On-site Treatment and Distribution Products* as required in Chapter 246-272A-0110(1) WAC**.**

Proprietary Product Registration

Manufacturers should refer to the *List of Registered On-site Treatment and Distribution Products,* Chapter 246-272A-0120 WAC, and this DS&G to learn how to register incinerating sewage technologies in Washington State.

Incinerators of proprietary design must be tested according to the protocol established in the National Sanitation Foundation (NSF) P157: Health and Sanitation of Electrical Incinerating Toilets (April, 2000). Comprehensive testing data must be submitted at the time of application. Product test results must meet the performance requirements established in the NSF test protocol, the department *List of Registered On-Site Treatment and Distribution Products*. The department does not require manufacturers to have on-going product certification by NSF.

The department is not aware of any public domain incinerators at the time of writing.

Application Standards

Permitting

The local health jurisdiction (LHJ) may only permit sewage technologies for which there are departmental standards and guidance (DS&G) and that appear on the department's *List of Registered On-site Treatment and Distribution Products.* The LHJ is responsible for ensuring the specific model is listed on the department's *List of Registered On-Site Treatment and Distribution Products* before permitting. Products that are not on the list cannot be approved for use in Washington State. If in doubt, check with the department for current listing information.

Incinerators shall only be permitted for repairs on properties with a prior permitted OSS, or on properties with a verified pre-permit OSS, where the drainfield has failed and there is no other available option for replacement meeting requirements outlined in Chapter 246-272A-0234 WAC or the repair options and methods outlined in Table IX in Chapter 246-272A-0280 WAC. Installation permits, and annual operational permits if required, must be obtained from the LHJ prior to installation and use of an incinerator disposal system.

An HTSS must meet the requirements outlined in Chapter 246-272A-0240 WAC and Section 1 in this document to be permitted. The HTSS must be installed prior to the incinerator where all of the wastewater from the structure is plumbed into this tank.

Final approval and inspection of an incinerating unit installed within a structure must be done by the local building department official. A pressure test/dose verification and test of the alarms may be done by the LHJ.

Approval Conditions

Proper electrical, plumbing, and/or gas line permits must be obtained through the local building/zoning departments and any other applicable regulatory agency for the incinerator site. It is the owner's responsibility to ensure all permits are obtained. Copies of additional permits may be required by the LHJ prior to permitting these systems.

Use Criteria

Incinerator units may be used where occupancy or use patterns are full-time or part-time, permanent, or temporary residential use only.

Influent Characteristics

Incinerators are meant to incinerate all wastewater, including black and grey water, from residential applications.

Incinerator Size/Model Selection

For proprietary incinerating units, follow the number of users or gallons per day identified on the *List of Registered On-site Treatment and Distribution Products*.

Specific OSS Approval Conditions for Incinerating Systems

1. Systems must be designed by a licensed septic designer or professional engineer licensed in Washington.
2. System must include a permitted "holding tank" as defined in Chapter 246-272A-0010 WAC and meet the requirements outlined in Section 1 of this document. Septic tanks approved for use in Washington State are on the department's *List of Registered Sewage Tanks*.
3. Structures must minimize daily sewage flows. To do this, they must incorporate water-saving fixtures and processes where possible. Use the same daily design flow estimates as for a conventional on-site sewage system (see Chapter 246-272A-0230 WAC).
4. Potable water must not serve the structure unless:
    a. A public sewer connection is provided, or
    b. A full-size subsurface sewage disposal system is installed, or
    c. The system is designed in a manner that ensures the incinerator unit cannot receive more than its approved daily flow.
5. The holding tank cannot receive wastewater once filled to 90% capacity. It is the responsibility of the septic designer or engineer to demonstrate these requirements will be met.

Design Standards

Due to the energy costs associated with operating an incinerator for greywater use, the septic system designer must include an energy cost analysis as part of the design.

Materials

Materials used in the construction of incinerators must be capable of resisting adverse conditions anticipated in the typical use environment, including climate, process temperatures, and cleaning procedures as prescribed by the manufacturer. All materials used must be durable and easily cleaned. Dissimilar materials may be used in mating parts but must have galvanic compatibility or be joined with insulating fittings.

Safety

Components must be designed and constructed so as not to present any hazardous or unsafe condition that may adversely affect personnel or property.

All electrical work, materials, and equipment must comply with applicable provisions of the National Electrical Manufacturers' Association (NEMA), the National Electrical Code, and local codes.

All gas-fired incinerating devices must comply with the applicable safety provisions of ANSI Standard Z21.61-1983 (R1996) for Gas-Fired Toilets.

Design Criteria

Incinerators must be capable of accommodating full or part-time residential usage.

Devices must be watertight and designed to prevent the discharge of untreated waste to the environment.

Ventilation components must be independent of other household venting systems. Venting connections must not be made to room vents or to chimneys. All vents must be designed to prevent flies and other insects from entering the device.

Component parts which are subject to malfunction, wear, or require cleaning must be accessible for inspection, cleaning, repair, or replacement. Surfaces which are accessible to the user must be easily cleaned.

Access Ports - Access ports must be sized and located to facilitate the installation, removal, sampling, examination, maintenance, and servicing of components and compartments that require routine maintenance and inspection.

Installation

Incinerators must be installed by a person certified by the manufacturer, according to the manufacturer's instructions, and in compliance with state and local requirements.

All other components of the OSS must be installed by a person approved by the local health officer.

Horizontal Separation

For incinerators installed entirely within a structure, there are no specific set-back requirements.

For incinerators where a part of the unit is installed directly into or on the ground or on the exterior of or below the structure served, the setback requirements are the same as prescribed for sewage tanks in Chapter 246-272A-0210 WAC.

For the sewage holding tank, those same requirements found in Section 1 of this document.

Vertical Separation

For incinerators installed entirely within a structure or a service vault, there are no specific vertical separation requirements.

Operation and Maintenance Standards

General Standards

1. The owner/operator of the system must notify the LHJ when the unit fails to function properly.
2. The property owner is responsible for assuring proper operation and providing timely maintenance of the incinerator unit and all other components of the system.
3. The authorized proprietary product representative must instruct, or assure that instruction is provided to, the property owner in proper operation of the incinerator. Emphasis must be placed on those aspects related to operating and maintaining the unit within its normal operating range.
4. The holding tank for incinerators must undergo the same regular maintenance as a standard septic tank. Minimum maintenance includes periodic inspection and, if necessary, pumping of the tank.

Installation Manual

Incinerator manufacturers must provide comprehensive and detailed installation instructions to authorized installers. Manufacturers of other system components must make available to the sewage system designer and/or installer similar documentation. The manual must be written to be easily understood by the installer and must include, at a minimum:

1. A numbered list of system components and an accompanying illustration, photograph, or print in which the components are respectively identified.
2. Design, construction, and material specifications, for the system's components.
3. Wiring schematics for the system's electrical components.
4. Off-loading and unpacking instructions, including safety considerations, identification of fragile components, and measures to be taken to avoid damage to the system.
5. A process overview of the function of each component and the expected function of the entire system when all components are properly assembled and connected.
6. A clear description of system installation requirements, including plumbing and electrical power requirements, ventilation, air intake protection, bedding, hydrostatic displacement protection, water tightness, slope, and miscellaneous fittings and appurtenances.
7. A sequential installation procedure from the building sewer.
8. Repair or replacement instructions in the event a system has flaws that would inhibit proper functioning and a list of sources where replacement components can be obtained.
9. A detailed start-up procedure.

Owner's Manual

Each incinerator system must be accompanied by a comprehensive owner's manual developed/assembled by the system designer and/or installer that addresses all components of the entire on-site wastewater system. The manual may be a collection of individual system component manuals. The authorized proprietary product representative must provide a manufacturer-prepared manual to the sewage system designer for the system owner. The manual(s) must be written to be easily understood by the owner and must include, at a minimum:

1. The system's primary functional components, equipment manufacturer(s) and model designation.
2. A statement designating treatment capacity (such as number of users, uses per day, and/or gallons per day).
3. A functional description of system operation, including diagrams illustrating basic system design and flow-path.
4. A clear statement of examples of the types of waste that can be effectively treated by the system.
5. A list of household substances that, if discharged to the system, may adversely affect the system, the process, or the environment.
6. Comprehensive operating instructions that clearly delineate the proper function of the system, operating and maintenance responsibilities of the owner and authorized service personnel, and service-related obligations of the manufacturer(s).
7. Requirements and recommended procedures for the periodic removal of residuals from the system.
8. A course of action to be taken if the system is used intermittently or if extended periods of non-use are anticipated, or if subjected to an electrical power interruption.
9. Detailed methods and criteria to be used to identify system malfunction or problems.
10. List of replacement parts.
11. Specifications pertaining to the energy source and energy required for proper operation of the incinerator unit.
12. The name and telephone number of an appropriate service representative to be contacted in the event that a problem with the system occurs.

O&M Service Recordkeeping and Reporting

The extent of the data reported, and the frequency of reporting, depends on various issues, such as the complexity of the overall on-site sewage system and the risk to public health or the environment presented by specific site characteristics. An increased monitoring or service frequency and an increase in reporting details may be required based on the individual system. The local health officer must specify the type of information to be reported, to whom it needs to be reported, the format of the information, and the frequency of reporting.

System Operation and Maintenance

Follow the manufacturer's instructions for operation and maintenance.

Disposition of the Final Product

Removal, beneficial use, or disposal of incinerated materials must be done in a manner that meets federal, state and local regulations. These regulations may fall under the authority of the Washington State Department of Ecology solid waste rules Chapter 196-350 WAC or other similar rules.

REFERENCES

1. Washington State Department of Health. List of Registered On-site Treatment and Distribution Products, as established in Chapter 246-272A WAC, On-Site Sewage Systems. Olympia, Washington. May 11, 2007, as updated.

2. National Sanitation Foundation. National Sanitation Foundation Standard No. 41 for Wastewater Recycle/Reuse and Water Conservation Devices. Ann Arbor, Michigan. November 1978, Revised May 1983.

3. National Sanitation Foundation. National Sanitation Foundation Protocol P157 Electrical Incinerating Toilets- Health and Sanitation (April 2000).

4. American National Standards Institute - Standard ANSI Z21.61-1983 (R 1996): Toilets, Gas-Fired. Revised 1996.