

Solidifying Infectious Waste



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Solidifying liquid infectious waste seems like a good idea. This fact sheet explores questions often asked about solidification, and explains concerns and costs associated with the practice.

Is it legal to solidify infectious waste?

It depends on the type of infectious waste.

Sharps – Wisconsin’s infectious treatment standards ([s. NR 526.11](#), Wis. Adm. Code) allow sharps to be put into a landfill only after the sharps are both disinfected AND rendered unable to be reused, or after the sharps are incinerated in a medical waste incinerator. Products that encase sharps in a solid or gel-like substance do not meet this treatment standard. When put in a garbage truck, the solidified containers can break open or be crushed, and that puts landfill workers at risk of injury.

If you use products that encase sharps, you may not dispose of the waste in a landfill until the sharps have undergone infectious waste treatment. The solidifying step may be unnecessary.

Liquid infectious waste – It is legal to solidify liquid infectious waste, provided that the waste is disinfected. It is up to the waste generator to verify any claims of disinfection. Even though it is legal, please consider the alternatives described below.

Note: Although you should contact your local sewer authority before discharging pharmaceuticals to the sewer, you may discharge blood and bloody saline without notification.

What are the alternatives for disposing of liquid infectious waste?

If your facility generates liquid infectious waste, the liquid may be a large proportion of the weight of infectious waste. The disposal alternatives for liquid infectious waste allowed Wisconsin’s administrative codes are:

- Incineration;
- Steam disinfection (e.g., autoclaving, microwaving);
- Chemical disinfection (e.g., products that disinfect and may solidify the waste); and
- Discharge of liquid waste to the sanitary sewer system. [[s. NR 526.11](#), Wis. Adm. Code]

If you don’t want to outsource disposal of your liquid wastes, the practical choices are chemical disinfection or discharge to the sewer system. Most of Wisconsin’s healthcare facilities must send infectious waste off-site for treatment. No Wisconsin healthcare facilities have incinerators anymore, and off-site incineration is not used

for sharps or liquid wastes. A few Wisconsin facilities can treat all their infectious wastes on-site, and many use small autoclaves to treat some portion of their wastes, but small units are not practical for large amounts of waste.

Of the two in-house options discussed above, **it may be best to discharge liquid infectious waste directly to the sanitary sewer, because this option often costs the least in the long run and is best for the environment.** Wastewater treatment plants are facilities specifically designed to break down biological wastes, including blood and body fluids. To route your waste to a wastewater treatment plant, you may:

- Re-plumb your building so that the liquid waste goes directly down the drain.
- Collect the liquid in reusable containers and rinse them. Manual rinsing is an option, but it adds labor costs and raises worker protection issues. Mechanical rinsing minimizes those concerns. Several systems are available.
- Collect the liquid in disposable containers, rinse out the liquid (while protecting worker safety) and recycle the containers.

However, if your healthcare facility has a septic system, this option will not work for you, and you will need to consider other alternatives.

What should be considered when evaluating alternatives?

Besides the environmental effects, cost and worker safety are top concerns. The direct cost of sewerage liquid infectious waste is inexpensive after the initial installation of equipment. The cost of machines to rinse containers can vary. The alternatives of off-site waste treatment and chemical treatment, on the other hand, require on-going purchase of a service or product.

Indirect costs can be considerable, however. When comparing the alternatives, be sure to consider the less obvious costs. These may include:

- Purchase of liquid containers and waste bags.
- Labor to purchase, move, use and store the chemical product, containers and bags.
- Landfill tipping fees.
- Record keeping for on-site treatment.
- Periodic tests on your treated waste, because it is up to you, the generator, to determine if a product actually disinfects your waste (see s. [NR 526.12](#), Wis. Adm. Code). (DNR has neither authority nor facilities for testing products itself.)
- Costs of complying with National Fire Protection Association codes, which presume that an operating room is a "wet location" that requires special, expensive, difficult to maintain electrical protection equipment. Keeping fluids contained in a fluid management system can mitigate the need for these electrical systems.

All the above can be considered as part of the financial case for these systems. You might also consider these environmental considerations of chemical treatment:

- You are adding a chemical and discarding it.
- If your container (e.g., suction canister) is not full, you either waste chemical by adding too much or risk not disinfecting it by adding too little.
- You are discarding containers, which wastes materials and may violate Wisconsin's recycling laws [[s. 287.07](#), Wis. Stats]. To find out more, see our publication "Waste Reduction and Recycling: A Guide for Wisconsin Healthcare" at <http://dnr.wi.gov/files/pdf/pubs/wa/wa1150.pdf>

- The chemical, container and waste take up valuable space in landfills.
- Eventually the chemical will either leach to groundwater or be removed and go to surface water via a wastewater treatment plant.

There are many in-line systems available for collecting liquid waste, so be sure to shop around. Also, check with your wastewater treatment plant operator.

Are there any case studies on these alternatives?

Yes. The Minnesota Technical Assistance Program (MnTAP) researched ways to reduce suction canister waste and posted its findings here: <http://mntap.umn.edu/health/91-Canister.pdf>

The Wm. S. Middleton Memorial Veterans Hospital in Madison, Wisconsin, found that re-plumbing the operating rooms paid for itself in a short time (about four years) compared to incinerating the waste on-site. Payback may have been even faster compared to using chemicals and sending waste off-site for treatment. For more information, contact the hospital's chief of environmental services at 608-262-7045.

Conclusion

In-line systems that remove liquid infectious wastes offer many advantages in cost, worker safety and to the environment. If you are unable to sewer your liquid waste, chemical disinfection may be the next best alternative.

For more information

Contact 608/266-2111 or DNRMedicalWaste@wisconsin.gov.

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