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Septic System Failures

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An existing septic system (on-site sewage treatment system) may function well or it may "fail" due to a number of causes. Evaluating septic system failures is a skill that anyone involved with septic systems should have, including installers, building inspectors, system designers, septic tank pumpers, and the homeowner.

Perhaps the single greatest cause of septic system failure is extra water entering the system. The extra water may come from leaky plumbing fixtures, but it commonly comes from poor surface drainage around the septic tank or pumping station. The soil absorption area may have been installed in a seasonally saturated soil that is at or above the rock level in the trenches or bed.

A sewage treatment system may fail in two ways:

- **The system may fail to hydraulically accept all of the wastes discharged into it.**

Hydraulic failure is apparent by surfacing of sewage in the yard or by a sewage backup in the home.

- **It may fail to properly treat the sewage.**

Failure to treat, such as discharging effluent into a sub surface drain tile, into a body of surface water, into fractured bedrock, or into a coarse, gravelly soil with no filtration capacity are all more difficult to detect.

Failure by a septic system to adequately treat the sewage does not result in immediate problems like those caused by lack of hydraulic acceptance.

Problems associated with failure to treat sewage may be more severe, however, than those associated with hydraulic failure. Pollution of shallow aquifers is one such potential problem. Discharge of untreated effluent into fractured bedrock has caused serious groundwater contamination in many wells, especially in areas of Karst geology.

If a septic system backs up in the house but not in the yard, measure the elevation difference between the two. If the level of the sewage (tank or drain field inspection pipe) in the yard is lower than the house, there may be a blockage in the sewer pipe.

Cast iron pipes at the outlet of the septic tank corrode shut in 5 to 15 years. Accordingly, if the drain field (as viewed through the inspection pipe) is only partially full and there is a sewage backup in the house, there may be a sewer line blockage either at the outlet pipe of the septic tank or in the house sewer line.

Open inspection pipes over both the inlet and outlet baffles of the septic tank to determine that there is no physical blockage at these points. If the inlet baffle is clear and a toilet flush does not flow readily into the tank, then the blockage is somewhere in the house plumbing or in the sewer pipe between the house and the septic tank.

If the septic tank is filled with liquid well above the inlet or outlet pipes, and the drain field is only partially filled with liquid, then the blockage is likely in the outlet pipe to the septic tank or somewhere in the pipe between the septic tank and the first drop box or first pipe connection/drain field component. Blockage of these pipes rarely occurs because these pipes carry only effluent. All of the solids should have been removed if the tank's outlet baffle is operating properly. The most likely cause of blocked outlets are corrosion of the cast iron pipe at the outlet of septic tanks.

If the septic tank is nearly full, remove enough of the liquid so that the inlet baffle is above the liquid level. Then test the house plumbing by flushing a toilet to determine if the liquid runs freely into the septic tank. This would be another method to determine whether the inlet pipe or the outlet pipe is blocked.

Plugging of the outlet pipe occasionally is caused by floating scum when the tank is improperly cleaned. If the tank's manhole is not removed during the tank cleaning process, it is likely that some of the floating scum and much of the sludge remains in the

tank. As the liquid level rises when the system is again being used, the hard scum layer may rise against the outlet end wall, completely plugging the outlet baffle. This situation can occur after a septic tank is pumped, but it should not occur if the septic tank has been in constant use.

If your on-site system is experiencing problems and is over 20 years old, you'll be money ahead if you replace the entire system.

For more information concerning on-site sewage systems, contact your local County Extension Office, certified on-site wastewater treatment contractor, septic tank pumper, or obtain a copy of MWPS-24 "On-site Domestic Sewage Disposal Handbook" (cost \$6) available from SDSU's Ag & Biosystems Engineering Department, Box 2120, Brookings, SD 57007, 605-688-5667.

Related Extension reference materials . . .

ESS 43-B Household Wastewater: Septic Systems and Other Treatment Methods

EC 665 Rural Wastewater Treatment for Individual Homes

FS 907 Septic System: Homeowner's Manual

ExEx 1018 Septic Tank Maintenance

ExEx 1032 Wastewater Treatment for Rural Homes and Cabins

ExEx 1033 Periodic Maintenance for On-site Wastewater Treatment Systems

ExEx 1034 Solving Wastewater System Backups

ExEx 1035 Septic System Additives — Not Needed

ExEx 1044 Recommended Method for Checking Homes with Septic System Failures

ExEx 1045 Home Owner's Responsibilities for Using On-site Sewage Treatment Systems

ExEx 1046 Trouble Shooting Septic Systems

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