



GAP Practices: On-Farm Water Resources- Drinking Water Wells

Water sources for irrigation and drinkable water (potable water)

- Wells are protected from outside contamination
- Drinkable water supply and/or wells are tested at least once a year
- Water source(s) used for washing produce are located the distance required by local/state regulations from manure storage facility, livestock area, pesticide storage area and/or septic system drainage field
- Water used to clean and /or sanitize produce meets the EPA Drinking Water Standard
- Records of all water tests on file
- Backflow devices and air gaps installed at appropriate locations

What is "Potable" water?

Potable water is water that is clean and safe to drink. Drinking water should comply with U.S. Environmental Protection Agency (EPA) standards. Non-potable water is not safe to drink and can include water from lakes, ponds, rivers, and streams that have been polluted by human sewage or animal waste runoff, or contaminated with pest control runoff or chemicals from agricultural fields, residential lawns, or industry.

EPA standards

Current drinking water standards are available at: <http://www.epa.gov/safewater/mcl.html>

Considerations for well water safety...

▪ ***Well location***

Whether a well taps water just below the ground or hundreds of feet deep, its location on top of the ground is a crucial safety factor. A well downhill from a livestock yard, a leaking tank or a failing septic system runs a greater risk of contamination than a well on the uphill side of these pollution sources.

▪ ***Separation distances***

Many states encourage good well location by requiring minimum separation distances from potential pollution sources, thus using the natural protection provided by soil.

▪ ***Well casing***

You can visually inspect the condition of your well casing for holes or cracks at the surface, or down the inside of the casing with a light. If you can move the casing around by pushing against it, you may have a problem with your well casing's ability to keep out contaminants.

▪ ***Well cap***

To prevent contaminants from flowing down the inside of the well casing, the driller should install a tight-fitting, vermin-proof well cap. The cap should be installed in a manner to prevent easy removal by children, entry by insects or surface water, and have a screened vent incorporated into it so that air can enter the well.

- ***Well age***

Well age is an important factor in predicting the likelihood of high nitrate concentrations in drinking water. A well constructed more than 70 years ago is likely to be a shallow dug well and probably surrounded by many potential contamination sources.

- ***Well type***

Dug wells pose the highest risk of drinking water supply contamination because they are shallow and often poorly protected from surface water. All other types of wells, including those constructed by a combination of jetting and driving, are drilled wells

- ***Well Depth***

Shallow wells draw from the ground water nearest the land surface, which may be directly affected by farmstead activities. Polluted surface water can infiltrate into the soil and quickly affect a shallow well that was not properly constructed or is located in a coarse-textured soil that easily conducts water. Deeper wells are more protected from surface contamination by the soil.

Backflow prevention

Without proper protection devices, something as useful as a hose attached to a faucet has the potential to poison the water supply in your processing facility. This can happen when there is a "cross-connection" in your water supply. A cross-connection is any actual or possible connection between the public or potable, private water source and a source of contamination or pollution.

If a cross-connection is present in the water supply, you may contaminate the water supply if "backflow" occurs. "Backflow means that the water is flowing in the opposite direction from its normal flow. With the direction of flow reversed, due to a change in pressures, backflow can allow contaminants to enter your potable water system through cross-connections. Backflows due to cross-connections are serious plumbing problems. They can cause sickness and even death.

Backflow can occur when the water pressure in a hose or hydrant reverses the direction of flow. A potentially hazardous cross-connection occurs every time someone allows a faucet hose to sit in contaminated or dirty water. Without a backflow prevention device between your hose and the faucet, the contents of the hose and anything it is connected to can backflow into the piping system and contaminate your drinking water.

Prevent backflow contamination by installing a backflow prevention device at the hydrant or on faucets with hose connections. The inexpensive device is a simple one way flow valve available from hardware stores.

- ***What is back-siphonage?***

Back-siphonage is one type of backflow. The flowing back of used, contaminated, or polluted water from a plumbing fixture or vessel or other sources into a potable water supply pipe due to a negative pressure in such pipe.

- **What is a backflow prevention device?**

Equipment, method or construction that prevents the flow of contaminated water back into a potable water supply.

- **What is an air gap?**

The unobstructed vertical distance between the lowest opening from any pipe, faucet, or hose, or other device, and the flood level rim of the sink or receptacle. The vertical physical separation shall be at least two times the inside diameter of the water inlet pipe above the flood rim level but shall not be less than one inch.

What can you do?

- Conduct an assessment of your drinking water well with this survey:
www.ecn.purdue.edu/SafeWater/farmasyst/surveys/drinkwaterwell.htm
- Develop a well maintenance plan. Test the water every year. Keep the well area clean and accessible and keep pollutants as far away as possible.
- If you have an older well (30-40 years or older), have the well examined by a water quality expert.
- Check for possible sources of contamination on your property and nearby, including: septic systems; animal waste, including manure storage; storage, handling and use of chemicals, including pesticides.
- If you are considering building a new well:
 - Follow your State's recommended minimum separation distances.
 - Locate your well on ground higher than surrounding pollution sources such as fuel tanks, livestock yards, septic systems or pesticide mixing areas. Where practical, locate the well as far as possible from pollution sources, but no closer than the minimum separation distances.
 - If necessary, build soil up around the well so that all surface water drains away from it. Avoid areas that are prone to flooding.
 - Make the well accessible for pump repair, cleaning, testing and inspection.
 - Hire a competent, licensed well driller and pump installer.

Note: Much of the information in this handout was adapted from **the Indiana Farmstead Assessment: Drinking Water Well Management Guide**, Purdue University, www.ecn.purdue.edu/SafeWater/farmasyst/surveys/factsheets/farmassess1.htm

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