

USDA-Agricultural Marketing Service

Good Agricultural Practices & Good Handling Practices Program

Water Quality Issues Frequently Asked Questions (FAQs)

- 1. The USDA GAP&GHP Audit Verification Program Checklist, Part 1 Farm Review Questions 1-3 and 1-4 requires a water quality assessment be performed to determine the quality of the water used for irrigation, chemical application or fertigation. What is a water quality assessment and what should be included?**

For agricultural water, the USDA GAP&GHP program requires the operation perform a water quality risk assessment to determine if the water quality is appropriate for the crop(s) it's being used on. The risk assessment should include the water quality, the type of irrigation method, and the crop being irrigated. The results of the risk assessment shall be used to determine an action level where the operation determines water quality is not suitable for use without taking a corrective action. Water tests are required to be conducted on a scheduled frequency to verify water quality is meeting the operation's action threshold as outlined in their SOPs. The USDA GAP&GHP program sets the following testing frequency:

- Municipal water: Test results are acquired from the local water authority annually or tested by the operation at least annually.
 - Well water: Water is tested one time during the growing season. If fecal coliforms are present, the well is treated with a sanitizer to reduce pathogen levels and is retested. Wells are monitored to make sure casings are secure and well-maintained and that livestock and manure storage areas are excluded from the well recharge and pumping area.
 - Surface water: Water is tested three (3) times during the growing season – first at planting, second at peak use, third at or near harvest.
- 2. The Produce GAPs Harmonized Food Safety Standard in Section 2.4 requires a water system risk assessment and a water management plan. What is a water system risk assessment and a water management plan?**

An initial **water risk assessment** shall be performed and documented that takes into consideration the historical testing results of the water source, the characteristics of the crop, the stage of the crop, and the method of application. The assessment should take into consideration the source water quality, method of delivery, and timing of delivery. Municipal water sources are viewed as the least likely to be contaminated. Well water that is not regularly tested has a medium to high risk of causing contamination. Surface water has the highest risk of contamination. If surface water is being used from a source which is not contained within the operation's boundaries (e.g. river, stream) the operation should make every effort to be aware of upstream activities and identify potential sources of contamination.

Farming operations must have knowledge of the quality of their source water in order to determine whether or not the product could become contaminated. Application methods include irrigation (overhead-sprinkler, flood-surface, furrow, drip-trickle, etc.), frost protection, and agricultural chemical application. Drip irrigation methods or those where the water does not touch the crop are less likely to promote potential contamination than flood irrigation methods. Irrigation with sprinkler methods where the water sprinkles or drenches the crop can be the most risky for causing contamination, especially if the water quality is unknown.

The timing in the crop cycle when water is applied should be addressed in the assessment of risk. Water applied weeks before harvest poses less risk than water applied to the edible portion of the crop near harvest. It is never the intent that potable or microbially safe water should be used in every water application on the farm. Chemical applications or irrigation that occur prior to the crop being planted or if the crop is dormant (such as tree fruit) does not require potable water. However chemical or irrigation applications that occur just prior to the crop being harvested must use microbially safe water.

A review or new assessment shall be conducted seasonally and any time there is a change made to the system or a situation occurs that could introduce an opportunity to contaminate the system. The risk assessment

shall address potential physical, chemical, and biological hazards and hazard control procedures for the water distribution system.

The **water management plan** shall include the following: preventive controls, monitoring and verification procedures, corrective actions, and documentation. The plan shall be reviewed following any changes made to the water system risk assessment and adjusted accordingly to incorporate such changes. The plan must be reviewed whenever changes in risk management occur. The operation shall train personnel in a manner consistent with the water management plan. Training and/or retraining of personnel having oversight or performance duties shall be documented.

3. What should I be testing for when I send a water sample to the laboratory?

Water testing shall be part of the water management plan, as directed by the water risk assessment and current industry standards or prevailing regulations for the commodities being grown. As required, there shall be a written procedure for water testing during the production and harvest season, which includes frequency of sampling, who is taking the samples, where sample is taken, how the sample is collected, type of test and acceptance criteria. If all agricultural water is sourced from a municipal source, the municipal testing is sufficient. The frequency of testing and point of water sampling shall be determined based on the risk assessment and current industry standards for commodities being produced.

More information on water testing examples:

On-Farm Decision Tree Project: Agricultural Water for Production

<http://www.gaps.cornell.edu/dt-agwater.html>

On-Farm Decision Tree Project: Postharvest Water

<http://www.gaps.cornell.edu/dt-postwater.html>

4. What is the threshold for the USDA GAP&GHP and the Harmonized GAP audit for acceptable water quality?

There is currently not a national irrigation water standard which sets the minimum microbial levels allowable for irrigation water. However, there are many commodity specific guidelines available which give recommendations for water quality. These can serve as a reference source for an operation when determining specific thresholds for their irrigation water. For instance the CA & AZ Leafy Greens Marketing Agreements and the Food Safety Standard for the Tomato Supply Chain identify the microbial requirements of the EPA Recreational Water Standard as the threshold for irrigation water.

For post-harvest water applications, the USDA GAP&GHP program requires that the water used meet the microbial requirements of the US EPA Drinking Water Standard. Any post-harvest water use which does not meet this standard will result in an “automatic unsatisfactory” assessment on the audit.

5. What is a USDA auditor looking for when they ask to see my water quality assessment, or water system risk assessment?

Auditors shall review the operations water quality risk assessment to verify that potential physical, chemical and biological hazards and hazard control procedures have been addressed to take into account the historical testing results of the water source, the characteristics of the crop, the stage of the crop, and the method of application.

For the water management plan auditors shall review preventive controls, monitoring and verification procedures, corrective actions, and documentation. They will also verify that the plan has been reviewed whenever changes occur to the risk assessment or within the operation.

See answer for question #2 for additional information.

6. Do I have to use potable water when irrigating my crops?

The microbial quality of all water used needs to be sufficient for the level of risk identified by your water risk assessment. The water quality requirements will depend on the source water type, method of delivery, and timing of delivery. There is no requirement that agricultural water does not need to meet potable water requirements.

7. Do I have to treat my water prior to irrigating my crops or using it to apply crop protection materials or nutrients?

No, however, the quality of agricultural water used must be known. The results of the risk assessment shall be used to determine an action level where the operation determines water quality is not suitable for use without taking corrective action. Corrective actions for water sources found to be unsuitable can include treating the water before use.

8. I am using trickle or flood irrigation for my tree fruit orchard, do I need to test my water? If so, why?

Yes, this water would need to be tested. A risk assessment would need to be performed for this water source, which would reflect the lower risk of the irrigation method chosen and the type of crop being irrigated, and a microbial requirement would need to be identified from this risk assessment. Knowing the quality of the water being used also allows the farmer to be able to make an informed decision on how to react if this water comes into contact with the edible crop (i.e. a punctured drip line that sprays onto the fruit).

9. I am using surface water to cool my fruit while it is in the field prior to transporting it to the packinghouse, is that acceptable?

If water directly contacts the harvested crop an operation's water use SOP requires the water meets the microbial standards for drinking water, as defined by the prevailing regulation. Water may be treated (e.g., with chlorine) to achieve microbial standards or to prevent cross contamination.

10. How will the FSMA Produce Safety Rules affect the requirements of the USDA GAP&GHP Program?

While the Produce Safety Rule under FSMA are still a proposed rule, and will not come out as a final rule until later in 2015, USDA-AMS has committed to aligning the GAPs Program to whatever the requirements are under FSMA. Further guidance will be made available once the Final Rule is published which will outline the changes to the USDA GAP&GHP Program.