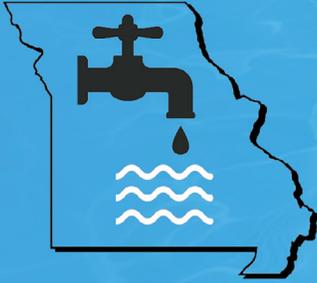


Missouri Department of Natural Resources OPERATOR CERTIFICATION SECTION

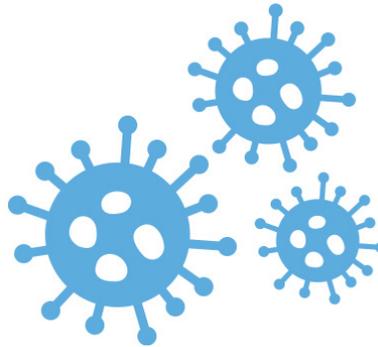


WATER & WASTEWATER DIGEST

Spring 2020

COVID-19

A huge thank you for your work as water and wastewater professionals. You are keeping our friends, families and communities safe during the COVID-19 pandemic by providing drinking water and wastewater services. We appreciate your continued service in the water and wastewater industry!



This newsletter doesn't contain a lot of COVID-19 information because by the time it reaches you, much of it would be outdated. Instead, consider providing us with your email address. During emergencies, important information can reach you faster by email. Go to apps5.mo.gov/operator/index.do to update your contact information and add an email address.

One of the emails sent out to operators on Mar. 27, 2020, notified operators of exam cancellations and renewal training waivers. If you have questions about the status of exams or renewal training, please contact our office at 573-751-1600 or go online to provide your email address to receive updates.

Operator Certification Exams (March 27, 2020)

Missouri is canceling all operator certification exams until further notice. Exams will resume once social distancing, building closures and traveling restrictions are resolved. Please focus on the health of your staff and avoid unnecessary travel.

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Renewal Training (March 27, 2020)

If you were unable to complete renewal training, and your drinking water treatment, distribution, wastewater treatment or CAFO certificate is due for renewal, mail back your renewal postcard along with the appropriate fee and include a note on the postcard citing you were unable to complete training due to COVID-19. The department will consider the circumstances in which COVID-19 has placed us and process certificate renewals through the duration of the emergency event. [Renewal Training waiver expires on June 15th.](#) [June expirations must be received by June 15th to be covered by the renewal training wavier.](#) No one can predict the timeline of when in-classroom training will once again be available, but when it does, classrooms will have limited space for attendance. Think long-range about training needs for certificates expiring later this year and consider completing online and correspondence training now. Visit our website at dnr.mo.gov/env/wpp/opcert/docs/online_correspondence_page.pdf to learn more about distance-learning opportunities.

We Need Your Input!

Subject Matter Experts (SMEs) play a critical role in assisting the Missouri Department of Natural Resources in developing operator certification exams. Certification exams assess an operator's knowledge, skills and abilities for competency. With hands-on working knowledge as operators, SMEs review and write exam questions and determine what level of exam individual questions apply.

If you, or someone you know, would like to be involved in shaping Missouri's certification exams, please complete this survey for consideration. The department will select people to represent a variety of experiences with technologies and classification levels of systems. Workshops generally consist of evaluating exam questions through group discussion and establishing the importance of each question based on how frequently an operator performs the task, its seriousness and criticality.



The one-day workshops are held at the Lewis and Clark State Office Building in Jefferson City and occur about three times per year for each type of certification: Drinking Water Distribution (DS), Drinking Water Treatment (DW) or Wastewater Treatment (WW).

Please complete a survey at www.surveymonkey.com/r/WWASTEWATER to enter your contact information or that of someone who you would like to nominate as a SME in the fields of DS, DW or WW.

The Importance of Accurate Employment History

The Operator Certification Exam Application includes an employment history section to capture an applicant's work history to determine if the person has sufficient experience to qualify for certification. The department uses the information provided to calculate how many years of experience the applicant has achieved. Sometimes, however, an applicant submits information that is inconsistent with a previous application's information. When this happens, department staff may seek clarification from the applicant. Some items requiring clarification

include changes to employment dates, changes to work percentages, incorrect or missing permit ID numbers or overlapping employment time frames.

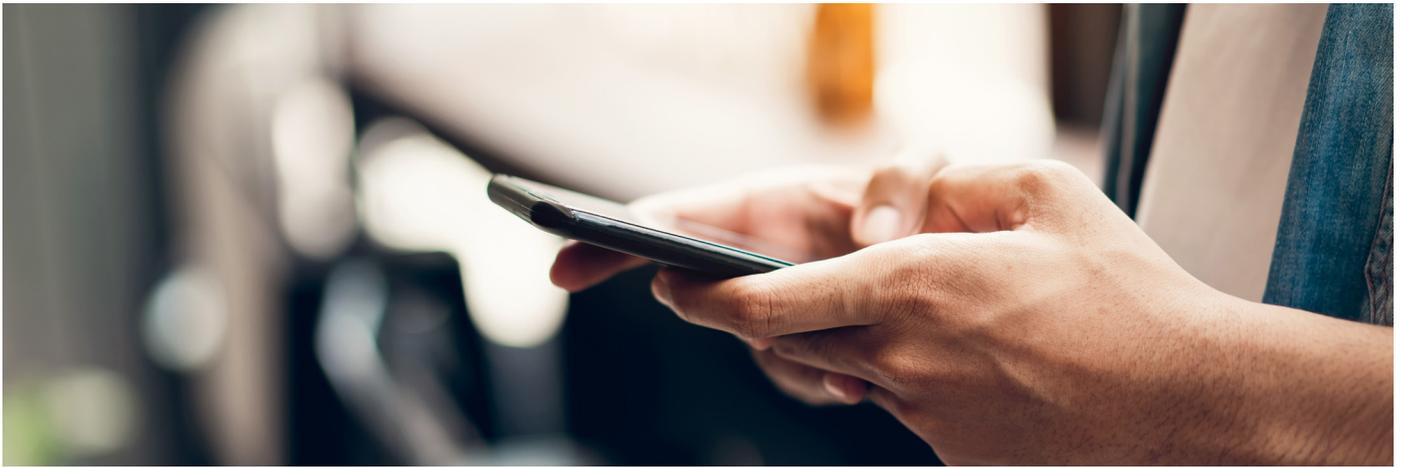
It is important to keep in mind revising work history can have a significant impact. In some cases, modifications have resulted in operators no longer being qualified for certificates they have already been issued. It is essential to provide a complete and accurate work history with each exam application. It is also strongly encouraged applicants keep a copy of each exam application. Employment history should be consistent no matter what type of certificate being sought.

Some things to remember:

- Keep a copy of submitted applications.
- Historic employment information should remain consistent on future applications.
- Historic employment information should be accurate and representative of the applicant's experience and not influenced by the type of certification sought.
- When work duties or percentages change, make a note so accurate information can be provided on future applications.

When providing employment history information, treat changes in work duties from the same employer as separate work experiences using more than one block on the form. See the example below:

EMPLOYMENT HISTORY				
EMPLOYER'S NAME		AREAS OF RESPONSIBILITY		%
City of Anytown				
MO NPDES # AND/OR MO0000007	MO PWSID #	DISTRIBUTION SYSTEM OPERATIONS (10 CSR 60-14)		
EMPLOYER'S ADDRESS 123 Administrative Blvd		DRINKING WATER TREATMENT OPERATIONS (10 CSR 60-14)		
CITY, STATE, ZIP CODE Anytown, MO 12345		WASTEWATER TREATMENT OPERATIONS (10 CSR 20-9)		100
START DATE: MO/DAY/YEAR 01/01/2015	END DATE: MO/DAY/YEAR 03/01/2016	WASTEWATER COLLECTION SYSTEM OPERATIONS (EQUIVALENT WASTEWATER TREATMENT AND DISTRIBUTION SYSTEM OPERATION EXPERIENCE ONLY) (10 CSR 60-14) (10 CSR 20-9)		
AVG HOURS PER WEEK 40	JOB POSITION/TITLE WWTP Operator II	CONCENTRATED ANIMAL FEEDING WASTE MANAGEMENT SYSTEMS OPERATIONS (10 CSR 20-14)		
WORK TELEPHONE WITH AREA CODE (999) 999-9999		OTHER (DESCRIBE: _____)		
SUPERVISOR'S NAME, TITLE, TELEPHONE WITH AREA CODE John Smith, Utilities Director, 999-999-9999		TOTAL (CAN NOT EXCEED 100%)		100
EMPLOYMENT HISTORY				
EMPLOYER'S NAME		AREAS OF RESPONSIBILITY		%
City of Anytown				
MO NPDES # AND/OR MO0000007	MO PWSID # MO9000000	DISTRIBUTION SYSTEM OPERATIONS (10 CSR 60-14)		70
EMPLOYER'S ADDRESS 123 Administrative Blvd		DRINKING WATER TREATMENT OPERATIONS (10 CSR 60-14)		0
CITY, STATE, ZIP CODE Anytown, MO 12345		WASTEWATER TREATMENT OPERATIONS (10 CSR 20-9)		20
START DATE: MO/DAY/YEAR 01/02/2014	END DATE: MO/DAY/YEAR 12/31/2014	WASTEWATER COLLECTION SYSTEM OPERATIONS (EQUIVALENT WASTEWATER TREATMENT AND DISTRIBUTION SYSTEM OPERATION EXPERIENCE ONLY) (10 CSR 60-14) (10 CSR 20-9)		
AVG HOURS PER WEEK 40	JOB POSITION/TITLE Operator I	CONCENTRATED ANIMAL FEEDING WASTE MANAGEMENT SYSTEMS OPERATIONS (10 CSR 20-14)		
WORK TELEPHONE WITH AREA CODE (999) 999-9999		OTHER (DESCRIBE: _____ streets _____)		10
SUPERVISOR'S NAME, TITLE, TELEPHONE WITH AREA CODE John Smith, Utilities Director, 999-999-9999		TOTAL (CAN NOT EXCEED 100%)		100



Automated Wastewater Notification System (Auto Dialer)

This is a recorded message... The Department of Natural Resources has started using an automated dialer to call owners and operators of wastewater treatment facilities with overdue Discharge Monitoring Reports (DMRs). This phone call provides a notification that at least one DMR is overdue for a facility and the permittee is in non-compliance with the operating permit until the missing report is submitted. Our goal is to provide quality customer service and assist permittees in attaining compliance with the Missouri Clean Water Law.

Preliminary results

The auto-dialer began calling facility contacts in October 2019 for facilities with an overdue monthly DMR for August. The calls promote missing DMRs be submitted via the electronic DMR (eDMR) system and resulted in a 31% reduction in overdue DMRs. A second round of phone calls began in November 2019 for quarterly and monthly reporting permittees that have not submitted DMRs due by Oct. 28, 2019. Overdue DMRs dropped by 30% following this round of calls. These are great results!

Benefits of the eDMR system

Submitting DMRs electronically can reduce many errors including:

- transcription errors.
- mailing issues.
- delayed data entry.
- not submitting both monthly and quarterly reports.
- outdated contact information.

Outdated contact information

If you would like to update contact information for your wastewater facility, please provide that to the appropriate Regional Office.

If you have any questions about the use of the auto-dialer, contact Kalyn Godard with the Water Protection Program at kalyn.godard@dnr.mo.gov or by phone at 573-526-1582.

Increasing Energy Savings and Funding Opportunities

Energy consumption by public drinking water and wastewater utilities, which are primarily owned and operated by local governments, can represent 30-40% of a municipality's energy bill. At drinking water plants, the largest energy use (about 80%) is operating motors for pumping. Drinking water systems need energy for raw water extraction and conveyance.

Achieve energy savings by improving energy efficiency, using less energy to provide the same level of service and water quality.

The first step in understanding energy consumption is to establish a baseline of energy consumption and costs. All baselines start with the collection of energy utility data and a utility bill analysis or the tracking of monthly and annual energy use compared to the volume of water produced or conveyed.

To establish a baseline, it is important to gather operational and equipment-specific data through an energy audit. An energy audit can be a useful tool to refine the initial baseline, to identify areas of inefficiency and to provide direction for energy saving opportunities or energy conservation measures (ECMs).

After a system has determined its baseline energy usage and conducted an energy audit, the next step is to identify, evaluate and prioritize potential ECMs. Typical criteria used to prioritize ECMs include:

- Estimated capital or upfront investment. <https://fas.org/sgp/crs/misc/R43200.pdf>
- Expected energy reductions (kWh/MGD) or percent energy savings.
- Simple payback periods – the time it will take to recover the initial investment in energy savings (Simple Payback = Cost of Project/Energy Savings Per Year).
- Annual cost savings (both energy and operation & maintenance).

Common ECMs include:

- Ensure proper equipment sizing.
- Upgrade motors with premium efficiency motors or install variable frequency drives (VFDs).
- Use energy demand management control systems.
- Install renewable energy options, such as solar photovoltaic (PV) systems.
- Install building upgrades, such as lighting and HVAC.

When making decisions, system staff can use this information to determine the level and types of investment over time. In general, the shorter the payback period the more attractive the project is.

The department's Division of Energy provides low-interest loan financing to eligible recipients for energy efficiency upgrades through the Energy Loan Program (ELP) the ELP can also finance upgrades due to emergencies that pose a threat to the health and safety of your community. To learn more about the ELP, visit the Division of Energy's website at energyloan.mo.gov/ or contact them at 855-522-2796.

Wastewater Sampling

Missouri State Operating Permits typically have requirements for the sampling of the treated wastewater that is discharged or irrigated. Understanding the conditions of the operating permit for the frequency and type of sampling is important to maintain compliance with its permit conditions and Missouri Clean Water Law. The key to obtaining good sampling data is to use proper testing methods when collecting a representative sample and ensuring the proper handling of that sample.

When getting ready to sample, you should ask five questions.

1. Why am I sampling?
2. What parameters am I sampling for?
3. Where am I sampling?
4. How am I sampling?
5. What analytical technique is the laboratory using?

The first question is the easiest to answer. You are most likely sampling because the operating permit requires the sample results to determine compliance with permit limits and other regulatory requirements. Permit limits are in place to protect the receiving stream and the environment.

The second question is answered by your permit. The permit states what parameters you will sample for, the type of sample and the frequency. You can usually find this in a table that lists the parameter and will note whether it is for monitoring or if there is an effluent limit. It will also list how frequent the parameter should be analyzed and whether the sample must be a composite or grab sample. A grab sample is a single, discrete, and instantaneous sample collected in one sample container, and a composite sample is comprised of multiple grab samples, or aliquots, over a specific length of time at specific intervals. The sample collector must place samples into the appropriate container with any required preservatives and ship or transport to the analyzing laboratory.

The third question is a bit harder. Are you sampling for compliance purposes, to meet a limit or operational reasons to see if your facility has a problem that needs correction? Sample collectors obtain compliance samples at the outfall unless otherwise stated in the permit. The outfall is the point where the treated wastewater leaves the facility and enters the environment. This is usually a pipe or structure prior to the receiving stream. For an operational or monitoring sample, it may be at a point somewhere inside the treatment process itself. These could include the primary cell of a lagoon or the aeration basin of an activated sludge plant. For some irrigation systems, it may be at the pump before irrigation.

The question of “How am I sampling?” refers not only to the type of sample but also your sampling procedure or technique. This question is very important. It will not matter how good the laboratory is or how well your facility is functioning if you collect a sample badly. Poor sampling technique can contaminate the sample or cause it to be invalid. This includes sample preservation and holding time exceedances.

Plan your sampling trip. Make sure you clean sample equipment like dippers or buckets. Avoid using soaps or detergents that might have residues. Residues could contaminate the sample with ammonia or other compounds. Make sure before you sample you have all the containers and preservatives you will need from the laboratory. Most

commercial laboratories will have a ready-made container with all the sample bottles and labels you need. Make sure any freezer packs or ice is ready for when you are finished collecting samples. Make sure you can make it to the laboratory within the time required for the samples you collect. Wastewater parameters, such as bacteria, have an eight-hour hold time. You must collect and transport the sample to the laboratory, and the laboratory must set the sample within eight hours of collection to be valid. Other common parameters such as Biochemical Oxygen Demand (BOD) or Ammonia as Nitrogen, when collected and preserved correctly, have hold times of 48 hours to 28 days. Commercial laboratories use a Chain of Custody (CoC) document to track your sample through the analytical process. Fill out the parts you can prior to sampling, such as parameter, date and the person collecting the sample. The time you collect the sample should be noted when you collect your samples. Place the CoC in the container with your samples. Putting it in a plastic zip-top bag can keep it from getting wet or stained. Once you have collected the samples, transport them to the analyzing laboratory as soon as possible.

Now that you have delivered your sample to the analytical laboratory, the last question comes up. What analytical technique is the laboratory using? The State's Red Tape Reduction effort in 2019 changed the regulatory references for approved wastewater analytical techniques. The state adopted the Code of Federal Regulations (CFR), 40 CFR Part 136.3 and Part 136.4 Aug. 28, 2017 as the approved analytical techniques. Permittees, not the laboratory, are responsible for the data submitted. You need to ensure your laboratory is using an approved method. Ask the laboratory what methods they are using. You should contact your nearest Missouri Department of Natural Resources regional office if you have questions.

After your laboratory has provided you the results of your sampling, now you must submit it to the department. If you are not currently using the Electronic Discharge Monitoring Report (eDMR) system you most likely will in the future. Its use is a regulatory requirement with few exceptions. Otherwise you may currently be submitting a paper copy. You should transcribe the data from your laboratory onto the proper form. Pay attention to the format on the permit, a limit of 30 mg/L is not the same as 30.0 mg/L. You can round both up and down following the department's requirements for rounding. (See our article 'Rounding of Significant Figures.')

Additionally, pay attention to the units identified in the permit for each parameter. You must report the analytical results in the same units identified in the operating permit. Do not report data in mg/L when the permit identifies the units in µg/L. You should be careful of reporting a zero as a result. If the parameter is a non-detect or ND, then report the result and the detection limit for the analysis. For example, if the laboratory reports a zero or ND with a detection limit <10 mg/L you would report both the result ND or 0; and the detection limit <10 mg/L. The detection limit for any analysis must be lower than the limit in your operating permit.

In summary, before sampling make sure you understand those five questions. When in doubt, contact the department and ask for assistance before you sample. Sampling costs time, effort and money, and you do not want to waste it by collecting a sample you will not be able to use.

To find a copy of your Missouri State Operating Permit online, visit dnr.mo.gov/env/wpp/permits/issued/wpcpermits-issued.htm or search for "Missouri wastewater permits".

The Importance of Capital Improvement Planning

What is a Capital Improvement Plan (CIP)? A CIP is a long-term plan for maintenance, improvements, replacements and upgrades of public drinking water or wastewater system assets. A CIP identifies the cost and timeline for future projects. Examples of projects that may require long-term planning include distribution line replacements, increasing capacity to keep up with growing demand and installing treatment to address noncompliance.

Developing a CIP might seem overwhelming at first, but you probably already have some of the necessary tools. For example, the first step in developing a CIP is identifying assets, their cost and their expected remaining useful life. Many systems have completed this as part of an asset management plan. The CIP builds on this by identifying timelines, costs and funding sources for repairing, replacing and upgrading identified assets. Assets with the shortest remaining expected life and the greatest impact on your ability to provide safe drinking water or clean wastewater are higher priority in the CIP. Additionally, your annual budget should include line items for capital projects and long-term savings to fund projects. Understanding the cost and timeline for repairs and replacements will help determine if your rates are sufficient or if you need to look for alternative funding sources.

Visit the Department's Capacity Development webpage at dnr.mo.gov/env/wpp/cap-dev.htm for links to CIP tools and resources, or email capacitydevelopment@dnr.mo.gov to learn more.

What to Expect When Renewing Your Wastewater Permit

Have you ever wondered what happens to your wastewater operating permit application once you complete, sign (certify) and submit it to the Missouri Department of Natural Resources? The following are highlights in the renewal process and common problems to avoid:

1. **Applications must be timely and complete.** State regulations allow for the automatic continuance of operating permits beyond the expiration date of the permit if, the department receives a timely and sufficient application and is unable to reissue the permit on time through no fault of the permittee. The department must receive complete applications for reissuance of site-specific operating permits at least 180 days before the expiration date of the permit to consider them on time and allow for the automatic continuance of the effective operating permit. Here are the most common items omitted from applications that causes them to be incomplete:
 - Certifying signature by an authorized individual and/or the lack of an adequate continuing authority.
 - Financial Questionnaire (Publicly Owned Treatment Works or POTWs).
 - eDMR application (if not already using eDMR).
 - Three expanded effluent tests using sufficiently sensitive testing methods (Only for POTWs with design flows \geq 1MGD or are required to have a pretreatment program).
2. **First contact with permit writer.** Once received, the department assigns a permit writer to review the application for completeness and any possible deficiencies. The permit writer will follow up with permittee via a phone call and "welcome letter," usually via email. This provides a direct line of communication between the permittee and permit writer to resolve any missing information as soon as possible.

3. **Permit synchronization.** The department synchronizes permits in a watershed to address watershed-specific water quality issues and/or allow permitted facilities within a given watershed to participate in water quality trading. The normal 5-year issuance period may be less to accomplish the synchronization, so be sure to review and be familiar with the expiration date.
4. **Fact sheet.** Permit writers use the fact sheet in the back of the permit to explain the rationale for the effluent limits and special conditions in the permit. The fact sheet contains additional language and citations from the regulations to help explain the permit rationale. The permit writer's contact information is at the end of the fact sheet, should the permittee have any questions.
5. **Changes to the permit.** Permit writers list the changes from the previous permit to the new permit in the comments section of the fact sheet. This section is usually located on the first or second page under Part I—Facility Information. The comments section lists changes in effluent limits, special conditions, monitoring frequencies and any other important comments.
6. **10-Day preview.** Once the permit writer completes the permit draft, the permittee has two options:
 - If the permittee indicated on the renewal application they wanted to review the draft permit prior to public notice, the permit writer will send the facility a copy via email. The permittee has 10 business days to look over the draft and ask any questions or make comments. This is a critical time to contact the permit writer to discuss the permit. If you do not have questions or comments, please let the permit writer know. Once you notify them, they can move forward with the 30-day public notice process.
 - If the permittee does not request a review of the draft permit, the permit writer will start the public notice process. During public notice, regardless of requesting a 10-day preview, the permittee will receive a copy of their draft permit for review and a chance to comment if they so choose.
7. **Public notice comments.** At the end of the 30-day public notice period, the permit writer will address any comments received. Responses to the comments that modify effluent limits and/or conditions of the permit are included in the final draft and described in Part VIII-Administrative Requirements of the fact sheet. The commenter will receive a formal letter responding to each comment from the department.
8. **Final permit.** At the completion of the department responding to public notice comments, the permit writer prepares the draft permit for issuance, including assigning both an effective and expiration date based on permit synchronization (See #3). The department will both mail the permit to the facility and post it on the department's permit website at dnr.mo.gov/env/wpp/permits/issued/wpcpermits-issued.htm.
9. **Modifications to an effective permit.** Modification applications are in the Forms and Permits section of the department's website at dnr.mo.gov/forms/. Payment for any modification fees must occur before the permit writer can proceed.

If you need further assistance, please contact the department's Domestic Permits Section at 573-522-4502.

Source Water Protection Program: UPDATE

The Missouri Department of Natural Resources is excited to announce new and improved source water assessment reports are now available to help public drinking water systems and the communities they serve protect local drinking water sources! These reports provide valuable information about sensitive source water areas, potential contaminant sources and preliminary risk assessments for each unique source. The improved reports feature a user-friendly interface, interactive capabilities and information that is more descriptive. If your water system has a source water or wellhead protection plan already, check out the new reports for inclusion in your plan. If your system does not yet have a protection plan, these reports can help you get started! To view the new report portal, go online and visit the 'Source Water Protection' link on the department's Public Drinking Water Branch Web page – you will find the new reports and a wealth of other information that can help protect your drinking water!

For additional information, please visit dnr.mo.gov/env/wpp/pdwb/swpp.htm, email the Source Water Protection and Assessment Coordinator at ken.tomlin@dnr.mo.gov or call 573-526-0269.

Rounding of Significant Figures for Reports

When completing a monthly report to submit to the department, operators will often record numbers taken directly off a meter, such as a turbidimeter, chlorine analyzer or pH meter. Many of these instruments may report figures with one, two or three decimal places. When calculating data for compliance reports, such as calculating a monthly average of all readings taken, it is often necessary to round-off by dropping the digits not significant for reporting purposes. Guidance from the EPA and in Standard Methods is if the last digit of the calculation is either a 6, 7, 8 or 9 be dropped and the preceding digit is increased by one. If the digits are 0, 1, 2, 3 or 4 drop it and do not alter preceding digit.

When the final digit dropped is five, you round to the nearest even number. For example, 1.35 becomes 1.4 and 1.65 becomes 1.6. The use of the even/odd rounding of numbers provides a more balanced distribution of results. Use of computer spreadsheets to reduce data typically follows this practice of rounding up.

However, how many decimal places are necessary on the monthly report? The operating permit specifies the "significant numbers" to report. For example, the monthly average limit for ammonia for a WWTP may be 1.4 mg/L, which is one decimal place. If the monthly average of ammonia tests calculated to 1.344 NTU, would be rounded to 1.3 NTU.

Public drinking water regulations require the monthly average for turbidity must be equal to or less than 0.3 NTU in at least 95% of all the measurements taken that month. If the calculated average is 0.344 NTU, this rounds down to 0.3 and is in compliance. However, if the result is 0.353 NTU it rounds up to 0.4 and the system is out of compliance.

Conventions for Rounding	Examples Rounding Off Values
If the digit dropped is 1, 2, 3 or 4, leave the preceding number as-is.	1.11 → 1.1 1.12 → 1.1 1.13 → 1.1 1.14 → 1.1
If the digit dropped is 5, round off the preceding digit to the nearest even number (consider 0 an even number when rounding off).	1.15 → 1.2 1.45 → 1.4
If the digit dropped is 6, 7, 8 or 9, increase the preceding digit by one.	1.16 → 1.2 1.17 → 1.2 1.18 → 1.2 1.19 → 1.2

References:

USEPA 1981. Procedures for Rounding-Off Analytical Data to Determine Compliance with Maximum Contaminant Levels Present in NIPDWR. WSG21

American Public Health Association, American Water Works Association and Water Environment Federation. 2005. Standard Methods for the Examination of Water and Wastewater. 21st Edition.

Where can I check my training hours?

Certified operators are encouraged to access training reports by visiting the department’s website at apps5.mo.gov/operator/index.do. To log in, the password is the last four digits of your social security number.

You can check training hours, renew certificates online, view and update contact information for public drinking water systems, including the chief operator, sample collector and administrative contact.

For more information, contact the department’s Operator Certification Section at 800-361-4827 or 573-751-1600.

The Operator Log-In Webpage Has Changed!

If you have the Operator Certification Information System bookmarked, you will need to update it to the address of apps5.mo.gov/operator/index.do.

A temporary redirect is in effect, but you are encouraged to update your bookmark **now**.