

THE MAIN EVENT

A NEWSLETTER FOR OKLAHOMA WATER & WASTEWATER OPERATORS VOLUME 5, ISSUE 3 DECEMBER 2004

Accurate calibration gives meaning to the low turbidity measurement

By Mike Sadar, Application Scientist II, Hach Company

Submitted by Julie A. Schlegel for Hach Company

This is the third in a series of articles prepared to help operators implement an accurate, low-level turbidity monitoring program they can use to ratchet up filtration effectiveness and reduce the health risks of finished water

We discussed in the previous article in this series how small mistakes in testing techniques can result in big measurement errors at turbidity levels less than 0.5 Nephelometric Turbidity Units (NTU). Calibration accuracy is especially vital in obtaining the reliable low-level readings on which you base municipal water treatment process decisions.

Primary Turbidity Calibration Standards

USEPA guidelines require lab and on-line turbidimeters used for NPDWR reporting be calibrated at least quarterly with a primary calibration standard. The formazin¹ and stabilized formazin² polymers,

Continued on Page 2

Table 1: The Effect of Calibration Standard Error on Sample Measurement

| Targeted Calibration Standard Value (NTU) | Actual Calibration Standard Value (NTU), considering a 0.2-NTU (best-case) error | Percent Error | How the Instrument Reads a 0.3-NTU Sample (NTU) |
|---|--|---------------|---|
| 20.0 | 20.2 | 1.0% | 0.303 |
| 2.0 | 2.20 | 10% | 0.330 |
| 1.0 | 1.20 | 20% | 0.360 |
| 0.5 | 0.70 | 40% | 0.420 |
| 0.2 | 0.40 | 100% | 0.600 |

Figure 1

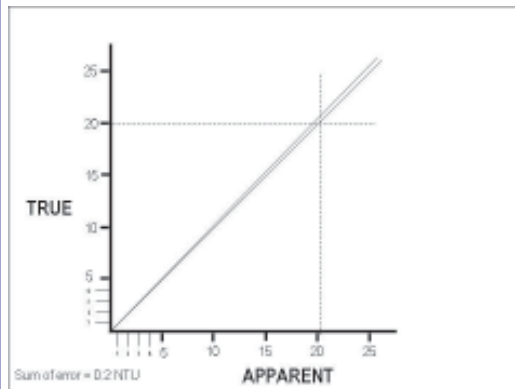
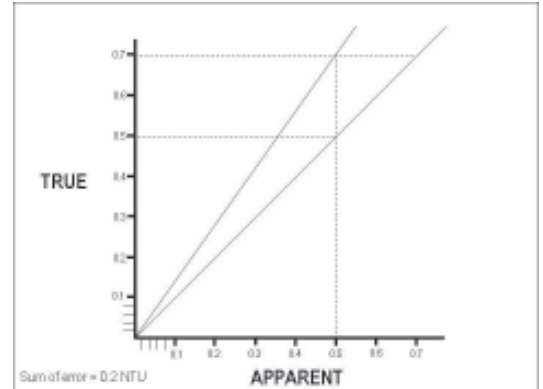


Figure 2



Contamination, along with dilution (volumetric transfer) error, often creates at least a 0.2-NTU error in the actual value of a formazin calibration standard solution. Figure 1 shows the minimal impact on low-level measurements when a calibration is made with a 20 NTU standard exhibiting 0.2-NTU preparation error. In Figure 2, the impact on accuracy of low-level measurements is much greater if the calibration is based on a 1.0-NTU standard with 0.2-NTU error.



With both laboratory and on-line turbidity measurement, the key to normalized readings – those that can be compared meaningfully with each other and with regulatory values – is an accurate instrument calibration.

ATTENTION APPROVED INSTRUCTORS!!

All Approved Instructors must meet the requirements of 252:710-3-37 by December 31, 2004.

Accurate calibration gives meaning to the low turbidity measurement, Continued

recognized by the water industry as primary turbidity standards, contain a highly reproducible (statistically consistent) range of irregularly shaped particles sized from 0.01 to 10 microns. This particle profile statistically represents the variety of natural particles in your water sample and 'mimics' the light scatter of your sample.

Comparative Calibrations

Operators frequently find it difficult to accurately calibrate one instrument against the reading from another instrument, because different instruments typically read the turbidity of a sample differently. The operator often will see an instrument gain error when attempting to match measurement values across different optical systems.

Use the manufacturer's recommended standard

The correlation between nephelometric (90°) light scattering and turbidity measurement made by a tungsten-lamp instrument is well defined and linear from approximately 0.012 Nephelometric

Turbidity Units (NTU) to 40 NTU. Table 1 and Figures 1 and 2 show that a higher-concentration standard solution suffering a small contamination or dilution error has much less impact on the accuracy of low-level measurements, than does 1.0-NTU solution with the same preparation error. It makes sense, then, that turbidimeter manufacturers usually recommend higher-concentration primary calibration standards such as 20 NTU or 40 NTU, even when *expected measurements are less than 1 NTU.*

Verification confirms the entire measurement process

Instead, operators should use ultra-low-turbidity standard solutions to validate the low end of their 20-NTU calibration.

Operators can use prepared, stabilized formazin verification standard solutions of 0.10, 0.30, 0.50, or 1.0 NTU as often as needed after primary calibration to confirm instrument stability and repeatability, check for possible lamp degradation or optical system contamination, and validate operator technique.

Even more convenient are mechanical calibration verification devices that operators can use quickly and repeatedly. Turbidity reading verification with wet or dry secondary standards is the ultimate proof of the effectiveness of the entire filtration and turbidity control program. (Request a free copy of Hach technical booklet #7045, "Turbidity Standards," for detailed information about the use of primary and secondary turbidity calibration standards.) Hach Regional Manager in Oklahoma, Kevin Menning, is ready to answer turbidity monitoring questions you might have after reading this article. Contact him toll-free 800-227-4224, ext. 2133.

(Endnotes)

¹ *Standard Methods for the Examination of Water and Wastewater*, 20th edition 2130 B, American Public Health Association, American Water Works Association, Water Environment Federation, 1998.

² Hach method 8195, accepted by USEPA for NPDWR (National Primary Drinking Water Regulations) compliance monitoring, USEPA letter dated April 20, 1998.

Home Study Correspondence Courses

California State University, Sacramento (CSUS) offers correspondence courses for operators. These training programs were prepared for the U. S. EPA by persons working in the field to help others develop the knowledge and skills necessary to do their jobs and to pass certification exams. California manuals are used as reference for Oklahoma operator certification exams. Nine (9) continuing education units (CEUs) are earned from CSUS upon successful completion of most courses. In Oklahoma, one (1) approved CEU is equal to ten (10) approved training hours. The manuals may also be purchased without enrolling in a correspondence course. For ordering information, please call CSUS at (916) 278-6142.

MSU Management Courses

Michigan State University (MSU) offers two management courses: Supervisory Management in the Water/Wastewater Field and Maintenance Management in the Water/Wastewater Field. A certificate from MSU for six (6) CEUs is awarded upon completion of each course. One (1) approved CEU is equal to ten (10) approved training hours. For enrollment information, call MSU at (800) 356-5705.

WRITTEN EXAM SESSIONS

Exam sessions begin at 8:30 a.m. Exam applications can be printed from the DEQ website, www.deq.state.ok.us. Exam applications are also available from the Operator Certification Section at (405) 702-8100. **Please be sure to use the current exam application (rev 1-2003), as our mail is no longer being forwarded from our old location. The old address may appear on old exam applications.** Any combination of two D and/or C exams may be taken at the same exam session. **All exam applications must be postmarked three weeks before the exam session.** The nonrefundable and nontransferable application fee (\$40 per exam) must be mailed with your application. Exams can be rescheduled within 120 days; however, all fees are forfeited if an exam is not taken within 120 days. If you have questions, please call Angie Ratcliff at (405) 702-8150. **WITHIN THREE WEEKS OF EXAM COMPLETION, A REPORT OF YOUR EXAM RESULTS WILL BE MAILED TO YOUR HOME. IN ORDER TO PROTECT YOUR PRIVACY, RESULTS CANNOT BE GIVEN OVER THE PHONE.**

PLEASE DO NOT CALL FOR EXAM RESULTS.

| <u>Exam Location</u> | <u>Date</u> | <u>Deadline</u> |
|---|-------------|-----------------|
| Tulsa, Tulsa Technology Center, 3850 N Peoria | January 14 | December 24 |
| Midwest City, Rose State College, Tom Steed Bldg., Hudiburg Drive | January 21 | December 31 |
| Midwest City, Rose State College, Tom Steed Bldg., Hudiburg Drive | February 4 | January 14 |
| Lawton, Great Plains AVTS Bldg. 600, Room 614, 4500 W. Lee Blvd. | February 11 | January 21 |
| Midwest City, Rose State College, Tom Steed Bldg., Hudiburg Drive | March 4 | February 11 |
| Tulsa, Tulsa Technology Center, 3850 N Peoria | March 11 | February 18 |
| Midwest City, Rose State College, Tom Steed Bldg., Hudiburg Drive | April 1 | March 11 |
| McAlester, Kiamichi AVTS, 301 Kiamichi Drive | April 8 | March 18 |

ONLINE EXAM SESSIONS

The online exams are scheduled to take place directly after most regularly scheduled training classes. As soon as each individual completes the exam, they will be able to view and print their results. All students should contact the training facility/sponsor to confirm that an online exam will take place after the class. The requirements necessary to be approved for the online exam are the same as for the written exams: an exam application must be completed and mailed with the application fee (\$40 per exam) to the DEQ three weeks prior to the exam date.

Order Form for Operator Certification Study Guides

Name _____
 Mailing Address _____
 City _____ State _____
 Zip Code _____
 Telephone # _____

After completing this form, please clip out and return it with a check, money order, or purchase order made payable to the Operator Certification Section.

Number of Study Guides:

Water _____ x \$4.00 each = \$ _____
 Wastewater _____ x \$4.00 each = \$ _____
 Distribution/Collection _____ x \$4.00 each = \$ _____

Please mail to:

Dept. of Environmental Quality
 Financial & Human Resources
 PO Box 2036
 OKC, OK 73101-2036

PLEASE ALLOW UP TO 3 WEEKS FOR DELIVERY.

TOTAL AMOUNT ENCLOSED \$ _____



WATER, WASTEWATER, and LABORATORY CLASS SCHEDULES

For all Standard Classes, you must register with the **SPONSOR** for the course you want to attend at least two (2) weeks in advance. To take the exam, you must send your application to the DEQ and it must be postmarked no later than three (3) weeks before the exam date. Classes listed in black type are guaranteed to take place. Those listed in blue type may be cancelled; please check with the sponsor to be sure those classes will take place. *The Advisory council has strongly recommended that instructors inform students a week in advance of any class cancellations. If you have signed up for a class with any of the instructional facilities listed and are unable to attend for any reason, PLEASE show the same professionalism in return and inform them of your change of plans.*

Beginning D Level Day Classes 8AM-5PM

| <u>Location</u> | <u>Subject</u> | <u>Dates</u> | <u>Credit</u> | <u>Sponsor</u> | <u>Phone</u> |
|-----------------|-------------------------|----------------|---------------|--------------------|--------------|
| Stillwater | Wastewater | Dec 1-2 | 16 hrs | AETC | 800 516-5227 |
| Burns Flat | Water | Dec 6-7 | 16 hrs | ORWA | 405 672-8925 |
| Oklahoma City | Water/Wastewater | Dec 7-9 | 24 hrs | AETC | 800 516-5227 |
| Oklahoma City | Water | Dec 7&9 | 16 hrs | AETC | 800 516-5227 |
| Oklahoma City | Wastewater | Dec 8-9 | 16 hrs | AETC | 800 516-5227 |
| Tulsa | Water/Wastewater | Dec 14-16 | 24 hrs | AETC | 800 516-5227 |
| Tulsa | Water | Dec 14&16 | 16 hrs | AETC | 800 516-5227 |
| Tulsa | Wastewater | Dec 15-16 | 16 hrs | AETC | 800 516-5227 |
| Stillwater | Distribution/Collection | Jan 3 | 8 hrs | AETC | 800 516-5227 |
| Choctaw | Water | Jan 3-4 | 16 hrs | ORWA | 405 672-8925 |
| Midwest City | Water | Jan 3-4 | 16 hrs | Rose State College | 405 733-7364 |
| Midwest City | Wastewater | Jan 5-6 | 16 hrs | Rose State College | 405 733-7364 |
| Sapulpa | Water | Jan 10-11 | 16 hrs | Rose State College | 405 733-7364 |
| Oklahoma City | Water/Wastewater | Jan 11-13 | 24 hrs | AETC | 800 516-5227 |
| Oklahoma City | Water | Jan 11&13 | 16 hrs | AETC | 800 516-5227 |
| Oklahoma City | Wastewater | Jan 12-13 | 16 hrs | AETC | 800 516-5227 |
| Tulsa | Water/Wastewater | Jan 11-13 | 24 hrs | AETC | 800 516-5227 |
| Tulsa | Water | Jan 11&13 | 24 hrs | AETC | 800 516-5227 |
| Tulsa | Wastewater | Jan 12-13 | 24 hrs | AETC | 800 516-5227 |
| Sapulpa | Wastewater | Jan 12-13 | 16 hrs | Rose State College | 405 733-7364 |
| Duncan | Water | Jan 17-18 | 16 hrs | ORWA | 405 672-8925 |
| Midwest City | Water | Jan 19-20 | 16 hrs | Rose State College | 405 733-7364 |
| Midwest City | Wastewater | Jan 26-27 | 16 hrs | Rose State College | 405 733-7364 |
| Oklahoma City | Distribution/Collection | Jan 31 | 8 hrs | AETC | 800 516-5227 |
| Enid | Water | Jan 31-Feb 1 | 16 hrs | ORWA | 405 672-8925 |
| Tulsa | Distribution/Collection | Jan 31 | 8 hrs | AETC | 800 516-5227 |
| Lawton | Water | Feb 7-8 | 16 hrs | Rose State College | 405 733-7364 |
| Lawton | Wastewater | Feb 9-10 | 16 hrs | Rose State College | 405 733-7364 |
| Broken Bow | Water | Feb 14-15 | 16 hrs | ORWA | 405 672-8925 |
| Stillwater | Water/Wastewater | Feb 22-24 | 24 hrs | AETC | 800 516-5227 |
| Stillwater | Water | Feb 22&24 | 16 hrs | AETC | 800 516-5227 |
| Stillwater | Wastewater | Feb 23-24 | 16 hrs | AETC | 800 516-5227 |
| Stillwater | Distribution/Collection | Feb 28 | 8 hrs | AETC | 800 516-5227 |
| Bartlesville | Water | Feb 28-March 1 | 16 hrs | ORWA | 405 672-8925 |
| Midwest City | Water | Feb 28-March 1 | 16 hrs | Rose State College | 405 733-7364 |
| Midwest City | Wastewater | March 2-3 | 16 hrs | Rose State College | 405 733-7364 |
| Tulsa | D/C Water | March 7-8 | 16 hrs | JE Training | 918 749-6942 |
| Oklahoma City | Water/Wastewater | March 8-10 | 24 hrs | AETC | 800 516-5227 |
| Oklahoma City | Water | March 8&10 | 16 hrs | AETC | 800 516-5227 |
| Oklahoma City | Wastewater | March 9-10 | 16 hrs | AETC | 800 516-5227 |

Beginning D Level Day Classes 8AM-5PM, Continued

| <u>Location</u> | <u>Subject</u> | <u>Dates</u> | <u>Credit</u> | <u>Sponsor</u> | <u>Phone</u> |
|-----------------|------------------|--------------|---------------|--------------------|--------------|
| Tulsa | Water/Wastewater | March 8-10 | 24 hrs | AETC | 800 516-5227 |
| Tulsa | Water | March 8&10 | 16 hrs | AETC | 800 516-5227 |
| Tulsa | Wastewater | March 9-10 | 16 hrs | AETC | 800 516-5227 |
| Wayne | Water | March 14-15 | 16 hrs | ORWA | 405 672-8925 |
| Midwest City | Water | March 21-22 | 16 hrs | Rose State College | 405 733-7364 |
| Midwest City | Wastewater | March 23-24 | 16 hrs | Rose State College | 405 733-7364 |
| Sallisaw | Water | March 28-29 | 16 hrs | ORWA | 405 672-8925 |
| Midwest City | Water | April 11-12 | 16 hrs | Rose State College | 405 733-7364 |
| Midwest City | Wastewater | April 13-14 | 16 hrs | Rose State College | 405 733-7364 |

Intermediate C Level Day Classes 8AM-5PM

| <u>Location</u> | <u>Subject</u> | <u>Dates</u> | <u>Credit</u> | <u>Sponsor</u> | <u>Phone</u> |
|-----------------|-------------------------|--------------|---------------|--------------------|--------------|
| Oklahoma City | Wastewater | Dec 14-16 | 24 hrs | AETC | 800 516-5227 |
| Stillwater | Distribution/Collection | Jan 4-6 | 24 hrs | AETC | 800 516-5227 |
| Midwest City | Water | Jan 10-11 | 16 hrs | Rose State College | 405 733-7364 |
| Midwest City | Wastewater | Jan 12-13 | 16 hrs | Rose State College | 405 733-7364 |
| Stillwater | Water | Jan 18-20 | 24 hrs | AETC | 800 516-5227 |
| Oklahoma City | Wastewater | Jan 25-27 | 24 hrs | AETC | 800 516-5227 |
| Tulsa | Water | Jan 25-27 | 24 hrs | AETC | 800 516-5227 |
| Oklahoma City | Distribution/Collection | Feb 1-3 | 24 hrs | AETC | 800 516-5227 |
| Tulsa | Distribution/Collection | Feb 1-3 | 24 hrs | AETC | 800 516-5227 |
| Stillwater | Wastewater | Feb 15-17 | 24 hrs | AETC | 800 516-5227 |
| Midwest City | Water | Feb 22-23 | 16 hrs | Rose State College | 405 733-7364 |
| Midwest City | Wastewater | Feb 24-25 | 16 hrs | Rose State College | 405 733-7364 |
| Stillwater | Distribution/Collection | March 1-3 | 24 hrs | AETC | 800 516-5227 |
| Tulsa | D/C Water | March 7-8 | 16 hrs | JE Training | 918 749-6942 |
| Sapulpa | Water | March 7-8 | 16 hrs | Rose State College | 405 733-7364 |
| Sapulpa | Wastewater | March 9-10 | 16 hrs | Rose State College | 405 733-7364 |
| Midwest City | Distribution/Collection | March 7-10 | 32 hrs | Rose State College | 405 733-7364 |
| Oklahoma City | Water | March 15-17 | 24 hrs | AETC | 800 516-5227 |
| Tulsa | Wastewater | March 15-17 | 24 hrs | AETC | 800 516-5227 |
| Midwest City | Water | March 28-29 | 16 hrs | Rose State College | 405 733-7364 |
| Midwest City | Wastewater | March 30-31 | 16 hrs | Rose State College | 405 733-7364 |
| Midwest City | Water | April 25-26 | 16 hrs | Rose State College | 405 733-7364 |
| Midwest City | Distribution/Collection | April 25-28 | 32 hrs | Rose State College | 405 733-7364 |
| Midwest City | Wastewater | April 27-28 | 16 hrs | Rose State College | 405 733-7364 |

Advanced A & B Level Day Classes 8AM-5PM

| <u>Location</u> | <u>Subject</u> | <u>Dates</u> | <u>Credit</u> | <u>Sponsor</u> | <u>Phone</u> |
|-----------------|-----------------------|---------------|---------------|--------------------|--------------|
| Midwest City | A Water | Jan 31- Feb 3 | 32 hrs | Rose State College | 405 733-7364 |
| Stillwater | A/B Wastewater | Feb 7-10 | 32 hrs | AETC | 800 516-5227 |
| Midwest City | B Water | Feb 14-17 | 32 hrs | Rose State College | 405 733-7364 |
| Midwest City | A Wastewater | March 14-17 | 32 hrs | Rose State College | 405 733-7364 |
| Midwest City | Water Management | April 4 -7 | 32 hrs | Rose State College | 405 733-7364 |
| Midwest City | Wastewater Management | April 11-14 | 32 hrs | Rose State College | 405 733-7364 |
| Midwest City | B Wastewater | April 18-21 | 32 hrs | Rose State College | 405 733-7364 |

CEU Plan On-Line Interactive Education

The following classes have been approved for four (4) hours of DEQ training:

On-Site Sodium Hypochlorite Generator Conversion, Hazardous Materials effects to Human Health, and Sludge Digestions and Solids Handling. Go to the web-site www.ceuplan.com and follow the prompts to enroll and pay for any classes.

Laboratory Day Classes 8AM-5PM

| <u>Location</u> | <u>Subject</u> | <u>Dates</u> | <u>Credit</u> | <u>Sponsor</u> | <u>Phone</u> |
|-----------------|----------------|------------------|---------------|--------------------|--------------|
| Stillwater | C Water | Dec 6-9 | 32 hrs | AETC | 800 516-5227 |
| Midwest City | B Water | Jan 10-13 | 32 hrs | Rose State College | 405 733-7364 |
| Midwest City | B Wastewater | Feb 7-10 | 32 hrs | Rose State College | 405 733-7364 |
| Oklahoma City | C Water | Feb 7-10 | 32 hrs | AETC | 800 516-5227 |
| Tulsa | C Wastewater | Feb 7-10 | 32 hrs | AETC | 800 516-5227 |
| Midwest City | C Wastewater | Jan 31-Feb 3 | 32 hrs | Rose State College | 405 733-7364 |
| Midwest City | C Water | Feb 22- 25 | 32 hrs | Rose State College | 405 733-7364 |
| Stillwater | C Water | March 14-17 | 32 hrs | AETC | 800 516-5227 |
| Midwest City | C Wastewater | March 21-24 | 32 hrs | Rose State College | 405 733-7364 |
| Stillwater | A Water | March 21-25 | 40 hrs | AETC | 800 516-5227 |
| Stillwater | B Water | March 21-24 | 32 hrs | AETC | 800 516-5227 |
| Stillwater | A Wastewater | March 28-April 1 | 40 hrs | AETC | 800 516-5227 |
| Stillwater | B Wastewater | March 28-31 | 32 hrs | AETC | 800 516-5227 |

General Training Classes Various Times

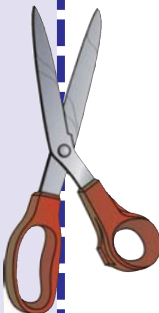
| <u>Location</u> | <u>Subject</u> | <u>Dates</u> | <u>Credit</u> | <u>Sponsor</u> | <u>Phone</u> |
|-----------------|-----------------------------|--------------|---------------|-----------------------|--------------|
| Sallisaw | Board Training | Dec 7-8 | 6 hrs | ORWA | 405 672-8925 |
| Wewoka | Renewal | Dec 8 | 4 hrs | ORWA | 405 672-8925 |
| Ponca City | Board Training | Dec 13-14 | 6 hrs | ORWA | 405 672-8925 |
| Nicoma Park | Security | Dec 14 | 4 hrs | ORWA | 405 672-8925 |
| Mannsville | Renewal | Dec 15 | 4 hrs | ORWA | 405 672-8925 |
| Durant | Security | Dec 17 | 4 hrs | ORWA | 405 672-8925 |
| Oklahoma City | CPR | Dec 21 | 8 hrs | City of Oklahoma City | 405 297-2609 |
| Butler | Security/Emergency Response | Jan 6 | 4 hrs | ORWA | 405 672-8925 |
| Mead | Board Training | Jan 18-19 | 6 hrs | City of Oklahoma City | 405 297-2609 |
| McAlester | Board Training | Jan 25-26 | 6 hrs | City of Oklahoma City | 405 297-2609 |
| Oklahoma City | Activated Sludge | Feb 7 | 6 hrs | Penn St. Conference | 814 863-6106 |
| Oklahoma City | The Microlife | Feb 8 | 6 hrs | Penn St. Conference | 814 863-6106 |
| Checotah | Board Training | March 15-16 | 6 hrs | ORWA | 405 672-8925 |

EMPLOYEE HIRE/TERMINATION NOTIFICATION FORM

The following information is needed in order to satisfy the requirement that system administrators and operators must notify our department within 10 days of an employee being hired or terminated.

Employer's Name _____
 Employee's Name _____
 License Number _____
 Water Classification _____ Wastewater Classification _____
 Water Lab Classification _____ Wastewater Lab Classification _____
 Date Employed _____ Date Terminated _____

This information should be addressed to:
 Department of Environmental Quality, Operator Certification
 Attn: Monroe McKissic, Enforcement Coordinator
 PO Box 1677
 OKC, OK 73101-1677.



INTERACTIVE TV RENEWAL CLASSES

Water or Wastewater Operators may attend either a Water or a Wastewater four (4) hour renewal class for certification renewal. If an operator has a license in both water and wastewater, one four hour class is all that is necessary. ALL CLASSES ARE HELD ON FRIDAYS FROM 12:00 PM TO 4:00 PM. The training at the Midwest City location is held in the LIBRARY/MEDIA CENTER, RM 129 at Rose State College. If you have any questions, please contact Mark Kurklin at (405) 702-8148. **Please Note that Pre-registration is required!** You must contact the receiving facility distance learning coordinator at the facility you plan to attend, and make a reservation by close of business on Tuesday before the Friday Training. If you forget to preregister, renewal training may not be available to you.

CLASS DATES

Updated 1-10-05

| Wastewater | Water |
|------------|-------------|
| December 3 | December 10 |
| January 7 | January 28 |
| February 4 | February 18 |
| March 4 | March 18 |
| April 1 | April 15 |



December 10, 2004
Response to Crisis
 Building an Effective
 Disaster Response Team
 Sponsored by Southwest Center for
 Public Health Preparedness

ONENET LOCATIONS AND COORDINATORS

| FACILITY | LOCATION | CONTACT | PHONE NUMBER |
|----------------------------|-----------------|----------------------|--------------------------------|
| Autry Technology Center | ENID | Kay Snow | (580) 242-2750 Ext. 126 |
| Cameron University-Lawton | LAWTON | Tink Glenn | (580) 581-2282 |
| East Central University | ADA (\$25 fee)* | Stanley Nnochirionye | (580) 332-8000 Ext. 622 or 266 |
| Eastern OK State College | WILBURTON | Keith Lewis | (918) 465-2361 Ext. 221 |
| High Plains Institute | WOODWARD | Vonda Phillips | (580) 571-6185 |
| Cameron University-Duncan | DUNCAN | Susan Camp | (580) 255-7566 |
| Kiamichi Technology Center | POTEAU | Sharon Hosler | (888) 567-6632 |
| McCurtain County Higher Ed | IDABEL | Barbara Echols | (580) 286-9431 |
| Murray State College | TISHOMINGO | Priscilla Washington | (580) 371-2371 Ext. 123 |
| Northeastern OK A&M | MIAMI | Cindy Bigby | (918) 540-6253 |
| Oklahoma State University | TULSA | Larry Cochran | (918) 594-8285 |
| Panhandle State University | GOODWELL | Carrie Haisten | (580) 349-1552 |
| Rose State College | MIDWEST CITY | Mark Kurklin | (405) 702-8148 |
| Seminole Junior College | SEMINOLE** | Mark Kurklin | (405) 702-8148 |
| S. E. OK State Univ. | DURANT | Clinton Freeman | (580) 745-2114 |
| Stuart High School | STUART | Terry Beck | (918) 546-2474 |
| S. W. OK State Univ. | WEATHERFORD | Lessley Price | (580) 774-3149 |
| S. W. OK State Univ. | SAYRE | Lessley Price | (580) 774-3149 |
| Tricounty Tech Center | BARTLESVILLE | Veda Sisney | (918) 331-3331 |
| University of Oklahoma | NORMAN | Mark Mitchell | (405) 325-3069 |
| USAO | CHICKASHA | Alan Todd | (405) 574-1277 |
| Unv. Learning Ctr N. OK | PONCA CITY | Brenda Stacy | (580) 762-2856 |

* The fee for Ada should be paid at the receiving site.

**No pre-registration required.

IF TECHNICAL DIFFICULTIES ARE EXPERIENCED DURING THE RENEWAL TRAINING,
 PLEASE CALL (405) 736-0327 or (405) 370-6425.



707 N. Robinson ♦ Oklahoma City, OK 73101

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Permit No. 1324

DECEMBER 2004

THE MAIN EVENT, DECEMBER 2004 8

**Wastewater Biology Classes, Penn State
Oklahoma City, Oklahoma on February 7-8**
Activated Sludge,
The Microlife: Filamentous Organisms, and
BOD and Metabolism

Operator Certification Contacts

| | |
|---|--|
| Water Quality Main # (405) 702-8100 Fax Line (405) 702-8101 | Forms & Operator Information Vnette Packhorse (405) 702-8172 or Jeannie Filkins (405) 702-8175 |
| Class Approvals, Temporary & Helper Licenses Interactive TV Classes Mark Kurklin (405) 702-8148 | Exam Approvals Angie Ratcliff (405) 702-8150 |
| DEQ Website WWW.DEQ.STATE.OK.US | |
| Newsletter & Suggestions Kristi Sanger (405) 702-8144 | Enforcement Monroe McKissic (405) 702-8146 |

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Advisory Council Meetings

The Waterworks and Wastewater Works Advisory Council meetings begin at 10 a.m. at the Department of Environmental Quality located at 707 N. Robinson in Oklahoma City, OK. These meetings are open to the public. The 2005 meetings will be held on Jan 21, May 13 and September 16.



This publication is printed on recycled paper and issued by the Oklahoma State Department of Environmental Quality as authorized by Steven A. Thompson, Executive Director. 8350 copies were produced by Central Printing at a cost of \$1,593.50. Copies have been deposited with the Publications Clearinghouse of the Oklahoma Department of Libraries.