

THE MAIN EVENT

August 2007

A Newsletter for Oklahoma Water and Wastewater Operators

VOLUME 8 ISSUE 2

OWPCA 81th Annual Short School

Oct 22-26, 2007.

Golf tournament
Broadmore Golf
Course in Moore, OK
October 22nd.

For registration and
additional information
call 800 766-9722
or go to www.owpca.org.



ORWA Western Hills Lodge Sequoyah State Park (Hulbert, OK) August 13-15

Golf and Bass tourna-
ment August 13th

BBQ at 5:30 pm on
Tuesday August 14th

For registration and
additional information
call 405 672-8925 or
go to okruralwater.org

PHARMACEUTICALS AND PERSONAL CARE PRODUCTS

Part two of a two-part series

By Karen Miles, PhD
Environmental Program Specialist II, DEQ

Little is known about what kind of impact PPCPs have on people in the long term or about potential hazards associated with multiple exposure to many different ones. Though the individual level of a particular drug may be so low as to have no affect on people, that drug may react with other PPCPs in the water to create a long-term health or environmental problem. In addition, some people are more susceptible to PPCPs than others. Those who may be most at risk include infants & children, sick people, and the infirm elderly.

The main sources for drugs found in waterways include pharmaceutical manufacturing, hospitals, unused drugs flushed down the toilet, and the excretion of drugs into the sewer system by people taking various medications. PPCPs usually get into the environment through treated and untreated sewage. PPCPs enter the environment by

the release of raw sewage through combined sewer overflows, sanitary sewer overflows, leakage from sewer pipes, failing septic systems, unpermitted privies, and straight-piping. The reason that PPCPs can get into the environment through treated sewage is because no municipal sewage treatment plants are engineered for PPCP removal. The focus of sewage treatment plants is the removal of "criteria" pollutants, but discharges from these plants can contain a wide range of other chemicals. Some drugs can be broken down in sewage treatment facilities through methods like activated charcoal, sand filtration, and degradative microbes used in a slurry or on rotating biological contactors (RBCs), but others are resistant to these methods. In addition, even though some oxidative treatments (such as ozonation, chlorination, and ultraviolet irradiation) can remove some drugs, those same processes can cause oth-

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BIOMONITORING Part two of three By Nancy Cain, PhD Environmental Specialist III, DEQ

As promised, this is the follow-up article to the teaser in *The Main Event December 2006* issue entitled "Biomonitoring, What Is It and Why Do We Have to Pay for It?"

The quote below is from the fact sheet for the Oklahoma Pollution Discharge Elimination System (OPDES) discharge permits for wastewater, which prompts the inclusion of biomonitoring in DEQ OPDES permits.

"Section 101 of the Clean Water Act states that...it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited...to ensure that no point-source discharge results in instream aquatic toxicity, a violation of applicable narrative or numerical State water quality standards, or aquatic bioaccumulation which threatens human health."



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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 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.

ATTENTION:

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.



CLASSES WILL BE HELD:

SEPT. 7 AND 14;
OCT. 5 AND 12; NOV. 2 AND 9;
AND DEC. 7 AND 14

FACILITY	LOCATION	CONTACT	PHONE NUMBER
Autry Technology Center	ENID	Kay Snow	(580) 242-2750 Ext. 126
Cameron University-Lawton	LAWTON	Bill Schemonia	(580) 581-2419 or -5551
East Central University	ADA (\$25 fee)*	Stanley Nnochirionye	(580) 310-5625
Eastern OK State College	WILBURTON	Keith Lewis	(918) 465-1782
High Plains Tech Center	WOODWARD	Vonda Phillips	(580) 571-6185
Cameron University-Duncan	DUNCAN	Cindy Meadows	(580) 255-7566
Kiamichi Technology Center	POTEAU	Kathy Davidson	(580) 376-5222
SOSU McCurtain Co. Campus	IDABEL	Barbara Echols Burton	(580) 376-5222
Murray State College	TISHOMINGO	Priscilla Washington	(580) 371-2371 Ext. 123
Northeastern OK A&M	MIAMI	Cindy Bigsby	(918) 540-6253
Oklahoma State University	TULSA	Larry Cochran	(918) 594-8285
Panhandle State University	GOODWELL	Sheldon Cayton	(580) 349-1386
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 (During school)	(918) 546-2474 Ext. 101
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 (Apr-Jun)	(405) 325-3069
University of Science & Arts	CHICKASHA	Alan Todd	(405) 574-1277
University Center at Ponca City	PONCA CITY	Brenda Stacy	(580) 762-2856

* The fee for Ada should be paid at the receiving site. **Pre-register with Mark Kurklin instead of Seminole Jr. College.

IF TECHNICAL DIFFICULTIES ARE EXPERIENCED DURING THE RENEWAL TRAINING,
PLEASE CALL (405) 736-0327 or (405) 370-6424.

WRITTEN EXAM SESSIONS

Written Exam sessions begin at 8:30 a.m. Exam applications can be printed from the DEQ website, www.deq.state.ok.us. They are also available from the Operator Certification Section at (405) 702-8100. Please be sure to use the current exam application (rev 7-2005). **PLEASE WRITE LEGIBLY.** 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.

<u>EXAM LOCATION</u>	<u>DATE</u>	<u>DEADLINE</u>
Midwest City , Rose State College, Rm 118 Health/Env Science Bldg., Hudiburg Dr.	August 3	July 13
Woodward , High Plains Institute of Technology, 3921 34th St, Rm 117	August 10	July 20
Tulsa , Technology Center, 3850 North Peoria, Council Oak Rm	September 7	August 17
Midwest City , Rose State College, Rm 118 Health/Env Science Bldg., Hudiburg Dr.	September 14	August 24
Clinton , Senior Citizen Center, 323 South 8th Street	October 12	September 21
McAlester , Kiamichi AVTS, 301 Kiamichi Drive	October 19	September 28
Oklahoma City , Clarion Meridian Hotel, 737 South Meridian	October 26	October 5
Midwest City , Rose State College, Rm 118 Health/Env Science Bldg., Hudiburg Dr.	November 2	October 12
Tulsa , Technology Center, 3850 North Peoria, Council Oak Rm	November 9	October 19
Midwest City , Rose State College, Rm 118 Health/Env Science Bldg., Hudiburg Dr.	December 7	November 16

Online Exams Sessions

The online exams are scheduled to take place directly after most regularly scheduled training classes. In order to take an online exam the student must complete the entire training class that is associated with that exam. 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 # _____

Number of Study Guides:

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

TOTAL AMOUNT ENCLOSED \$ ____

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.

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.





CLASS SC

For all Standard Classes, you must register with the sponsor for the course you want to attend to the DEQ and it must be postmarked no later than three (3) weeks before the exam date.

BEGINNING D LEVEL

LOCATION	SUBJECT	DATES	CREDIT	SPONSOR	PHONE
Stillwater	Water	Aug 07&09	16 hrs	Accurate	800-516-5227
Stillwater	Water & Wastewater	Aug 07-09	24 hrs	Accurate	800-516-5227
Stillwater	Wastewater	Aug 08-09	16 hrs	Accurate	800-516-5227
Oklahoma City	Water & Wastewater	Aug 07-08	16 hrs	Accurate	800-516-5227
Oklahoma City	Water	Aug 07&09	16 hrs	Accurate	800-516-5227
Oklahoma City	Wastewater	Aug 08-09	24 hrs	Accurate	800-516-5227
Midwest City	Water	Aug 09-10	16 hrs	Rose State	405-733-7364
Woodward	Water	Aug 14-15	16 hrs	ORWA	405-672-8925
Midwest City	Wastewater	Aug 16-17	16 hrs	Rose State	405-733-7364
Stillwater	Water	Sept 04&06	16 hrs	Accurate	800-516-5227
Stillwater	Water & Wastewater	Sept 04-06	24 hrs	Accurate	800-516-5227
Stillwater	Wastewater	Sept 05-06	16 hrs	Accurate	800-516-5227
Midwest City	Water	Sept 04-05	16 hrs	Rose State	405-733-7364
Tulsa	Water & Wastewater	Sept 11-13	24 hrs	Accurate	800-516-5227
Tulsa	Water	Sept 11-13	16 hrs	Accurate	800-516-5227
Wayne	Water	Sept 11-12	16 hrs	ORWA	405-672-8925
Tulsa	Wastewater	Sept 12-12	16 hrs	Accurate	800-516-5227
McAlester	Water	Sept 25-26	16 hrs	ORWA	405-672-8925
Midwest City	Water	Oct 02-03	16 hrs	Rose State	405-733-7364
Stillwater	Water	Oct 02&04	16 hrs	Accurate	800-516-5227
Stillwater	Water & Wastewater	Oct 02-04	24 hrs	Accurate	800-516-5227
Stillwater	Wastewater	Oct 03-04	16 hrs	Accurate	800-516-5227
Oklahoma City	Water & Wastewater	Oct 02-04	24 hrs	Accurate	800-516-5227
Oklahoma City	Water	Oct 02&04	16 hrs	Accurate	800-516-5227
Oklahoma City	Wastewater	Oct 03-04	16 hrs	Accurate	800-516-5227
Afton	Water	Oct 23-24	16 hrs	ORWA	405-672-8925
Atoka	Water	Nov 06-07	16 hrs	ORWA	405-672-8925
Stillwater	Water	Nov 06-08	16 hrs	Accurate	800-516-5227
Stillwater	Water & Wastewater	Nov 06-08	24 hrs	Accurate	800-516-5227
Stillwater	Wastewater	Nov 07-08	16 hrs	Accurate	800-516-5227
Midwest City	Water	Nov 08-09	16 hrs	Rose State	405-733-7364
Tulsa	Water & Wastewater	Nov 27-29	24 hrs	Accurate	800-516-5227
Tulsa	Water	Nov 27-29	16 hrs	Accurate	800-516-5227
Burns Flat	Water	Nov 27-28	16 hrs	ORWA	405-672-8925
Tulsa	Wastewater	Nov 28-29	16 hrs	Accurate	800-516-5227
Stillwater	Water	Dec 04&06	16 hrs	Accurate	800-516-5227
Oklahoma City	Water & Wastewater	Dec 04-06	24 hrs	Accurate	800-516-5227
Oklahoma City	Water	Dec 04&06	16 hrs	Accurate	800-516-5227
Oklahoma City	Water	Dec 05-06	16 hrs	Accurate	800-516-5227
Stillwater	Water & Wastewater	Dec 04-06	24 hrs	Accurate	800-516-5227
Stillwater	Wastewater	Dec 05-06	16 hrs	Accurate	800-516-5227
Tulsa	Water & Wastewater	Dec 18-20	24 hrs	Accurate	800-516-5227
Tulsa	Water	Dec 18-20	16 hrs	Accurate	800-516-5227
Tulsa	Wastewater	Dec 19-20	16 hrs	Accurate	800-516-5227

SCHEDULES

Send at least two (2) weeks in advance. To take the exam, you must send your application on time. Please remember to check with the sponsor to be sure that classes will take place.



INTERMEDIATE C LEVEL

LOCATION	SUBJECT	DATES	CREDIT	SPONSOR	PHONE
Midwest City	Wastewater	Aug 02-03	16 hrs	Rose State	405-733-7364
Tulsa	Water	Aug 14-16	24 hrs	Accurate	800-516-5227
Stillwater	Water	Aug 21-23	24 hrs	Accurate	800-516-5227
Midwest City	Distribution/Collection	Aug 23-24	16 hrs	Rose State	405-733-7364
Midwest City	C Distrib/Collection Operator	Aug 23-24	16 hrs	Rose State	405-733-7364
Midwest City	T Distrib/Collection Tech	Aug 31	8 hrs	Rose State	405-733-7364
Tulsa	Water	Sept 11-13	24 hrs	Accurate	800-516-5227
Midwest City	Wastewater	Sept 13-14	16 hrs	Rose State	405-733-7364
Stillwater	Wastewater	Sept 18-20	24 hrs	Accurate	800-516-5227
Midwest City	Water	Sept 20-21	16 hrs	Rose State	405-733-7364
Stillwater	Water	Oct 9-11	24 hrs	Accurate	800-516-5227
Tulsa	Wastewater	Oct 16-18	24 hrs	Accurate	800-516-5227
Stillwater	Wastewater	Nov 13-15	24 hrs	Accurate	800-516-5227
Midwest City	Wastewater	Nov 29-30	16 hrs	Rose State	405-733-7364
Stillwater	Water	Dec 11-13	24 hrs	Accurate	800-516-5227

LABORATORY

LOCATION	SUBJECT	DATES	CREDIT	SPONSOR	PHONE
Stillwater	C Water	Aug 13-16	32 hrs	Accurate	800-516-5227
Vinita	C Water	Aug 28-31 Aug 20-23	32 hrs	ORWA	405-672-8925
Midwest City	B/A Water	Aug 28-31	32 hrs	Rose State	405-733-7488
Stillwater	C Wastewater	Sept 10-13	32 hrs	Accurate	800-516-5227
Miami	B/A Wastewater	Sept 10-13	32 hrs	ORWA	405-672-8925
Wewoka	C Water	Sept 24-27	32 hrs	ORWA	405-672-8925
Midwest City	C Water	Sept 25-28	32 hrs	Rose State	405-733-7488
Chickasha	C Wastewater	Oct 01-04	32 hrs	ORWA	405-672-8925
Stillwater	A Wastewater	Sept 24-28	40 hrs	Accurate	800-516-5227
Stillwater	B Wastewater	Sept 24-27	32 hrs	Accurate	800-516-5227
Stillwater	C Water	Oct 15-18	32 hrs	Accurate	800-516-5227
Midwest City	B/A Wastewater	Oct 16-19	32 hrs	Rose State	405-733-7488
Stillwater	A Water	Oct 29-Nov 02	40 hrs	Accurate	800-516-5227
Stillwater	B Water	Oct 29-Nov 01	32 hrs	Accurate	800-516-5227
Stillwater	C Wastewater	Nov 26-29	32 hrs	Accurate	800-516-5227
Midwest City	C Water	Nov 27-30	32 hrs	Rose State	405-733-7488
Stillwater	C Water	Dec 17-20	32 hrs	Accurate	800-516-5227

ADVANCED A & B LEVEL

LOCATION	SUBJECT	DATES	CREDIT	SPONSOR	PHONE
Stillwater	A Wastewater	Jul 30-Aug 03	38 hrs	Accurate	800-516-5227
Stillwater	B Wastewater	Aug 06-09	30 hrs	Accurate	800-516-5227
Midwest City	B/A Wastewater	Aug 14-17	32 hrs	Rose State	405-733-7364
Midwest City	B/A Water	Aug 21-24	32 hrs	Rose State	405-733-7364
Stillwater	A Water	Aug 27-31	38 hrs	Accurate	800-516-5227
Stillwater	B Water	Aug 27-30	30 hrs	Accurate	800-516-5227
Midwest City	B/A Wastewater	Nov 06-09	32 hrs	Rose State	405-733-7364

The Environmental Protection Agency (EPA) in 40 CFR 122 requires *Major* facilities to perform biomonitoring. Major facilities include certain industrial facilities, and municipal facilities whose design flow is 1 million gallons per day (MGD) or more. About 100 industries and municipalities in Oklahoma have wastewater discharge permits that require biomonitoring.

OPDES permits have four parts. Parts 1 and 2 deal directly with the discharge and are site-specific. Part 1 lists discharge limits and the monitoring requirements for specific pollutants, while Part 2 contains explanatory/implementation language. For major permits, most of Part 2 pertains to biomonitoring and the consequences of failing biomonitoring tests.

Two different sets of tests are required on the effluent for permits having biomonitoring requirements. One set measures specific parameters for pollutants listed in Part 1 of the permit. These are **chemical** tests that are required in every wastewater discharge permit. Some parameters routinely tested for include pH, total suspended solids (TSS), biochemical oxygen demand (BOD), chemical oxygen demand (COD), oil and grease, temperature, specific metals, ammonia, and total dissolved solids (TDS).

The second set contains EPA-composed methodologies which describes tests for two **biological** organisms: an *invertebrate* water flea (daphnid), and a *vertebrate* fish (fathead minnow). These organisms are microscopic and indigenous to this area of the country.

The **chemical** tests are straight forward. The permittee is allowed to discharge a certain amount of a pollutant and must test the effluent regularly to determine the amount of pollutant discharged. The allowable amount is calculated by a permit writer and is based on a mathematical model. The tests are run by analytical laboratories certified by the DEQ. If this permissible amount is exceeded, the permittee receives a notice from the Water Quality Division Enforcement Section to take the necessary corrective action.

The chemical test is not foolproof. Just because the permittee passes the tests for all the individual chemical parameters doesn't mean the discharge as a whole isn't toxic. The biomonitoring test determines the toxicity of the entire effluent on water fleas and fathead minnows.

Biomonitoring was introduced in discharge permits in the 1980s. The Whole Effluent Toxicity (WET) biomonitoring tests are conducted in the lab and are designed to simulate the effect that the entire discharge has when it enters the receiving stream. The WET test models do take into account whether the receiving stream is perennial (flows all the time) or ephemeral (dry or almost dry part of the year).

Biomonitoring tests are separated into either acute (48 hour) or chronic (7 day). Permittees who discharge to perennial streams usually must perform acute tests, while those who discharge to ephemeral

streams usually must conduct chronic tests. Some permittees are required to perform both acute and chronic tests. The testing requirements are based on the ratio of the flow of the effluent to the flow of the receiving stream. The permit writer determines this ratio using specific mathematical models.

The endpoint (result) of acute tests measures lethality (survival). If more than 50 percent of the organisms die, the test result is described as a failure.

Chronic tests last a week, giving the water fleas a chance to have to reproduce as many as three times, and the fish the time to grow. Whether reproduction or growth, both are endpoints that are described as sublethal.

What do the biomonitoring tests **reveal**? The tests indicate whether or not the whole effluent is toxic and to which organism it may be harmful. In EPA terms, it reveals which organism is more sensitive to the whole effluent.

How is the toxicity **calculated**? The test results are analyzed in a statistical program which determines if the tests are a failure or not. There are several statistical programs available. The biomonitoring laboratories feed the data from the biomonitoring tests into whichever program is being used. The program results determine if the test is a statistical pass or failure. There can be false positives or negatives and some scrutiny of the results may be required to decide if the test has passed or failed.

[Watch for the rest of this article in the December 2007 Main Event Newsletter.](#)

Rose State College's Oklahoma Environmental Training Center is now providing a free 4 hour online water and wastewater operator renewal class which is available to any operator who has computer internet access. This class will satisfy the annual DEQ requirement for four-hours of class room instruction to renew a water or wastewater operator's license. To enroll, call (405) 733-7488 and ask to take the on-line DEQ 4 hour license renewal class. Instructions will be given over the phone regarding how to access the class. When the course is finished, a 50 question test must be completed. Anyone who scores 70% or higher on the test will receive a class completion certificate. If you have any questions please call Bill Clark at (405) 733-7364 or Cookie Nichols at (405) 733-7972.

er drugs to break down and create new compounds in the effluent.

Since it's not known whether sewage treatment facilities can even be modified to eliminate all PPCPs and since there will always be some untreated sewage that gets into the environment, the best way to reduce PPCPs is to stop them from getting into the sewage system to begin with. There are several ways this can be done. For example, drugs can be designed so that less of the drug is actually excreted. One example of this being done has been the development of rapid-dissolve tablets since it is usually the insoluble part of the medication that is excreted. Physicians should not overprescribe medication where it either goes unused or expires before it can be used. Medications should be ordered at the lowest level possible to do the job and in a form (like inhalation or through the skin) that results in less of the insoluble form of the drug being excreted.

Even though sewage treatment operators have no control over these ways of preventing PPCPs from getting into the environment, they can have an impact when it comes to

educating the public. Here are some items that are very effective:

- Don't flush unused medications down the toilet. Some drug stores may take the medications back. If they won't, then the medicines should be thrown away. Some community household hazardous waste programs will take unused medicines. But before they are thrown away, people should remove or scratch out their names for security purposes, put the containers in something like a yogurt or old plastic margarine container, and add a small amount of water to the pills to discourage their use if somebody does find them in the trash. For hospitals and nursing homes, the Oklahoma Utilization of Unused Prescription Drugs Act allows medicines to be recycled.
- Only buy the smallest amount of a drug that is needed whether this is a prescription or an over-the-counter medicine. If a large amount of a medication is bought and then found out to not work for that person, then the rest is wasted. Also if people buy some medicine (like aspirin) in bulk, it may expire before it's all used.

- More and more people are beginning to ask their doctors for certain drugs just because they saw an advertisement for it. Though it is good to research one's medical condition and see what medicines may be most effective for it, people should not be swayed by advertisements.

- Don't buy medication over the internet unless the internet pharmacy is VIPPS (Verified Internet Pharmacy Practice Sites) certified. These sites will have a VIPPS hyperlink. The National Association of Boards of Pharmacy developed this certification program for internet pharmacies in 1999 to weed out those that might sell counterfeit or fake drugs. Some of these can contain dangerous ingredients.

If the public is informed and takes actions such as these, it will help in reducing the amount of PPCPs released into the environment. Given the limited amount of water available to us, everybody needs to do their part to keep it as clean as possible.

[1] Daughton, C.G. and Ternes, T.A. (1999). "Pharmaceuticals and Personal Care Products in the Environment: Agents of Subtle Change?" *Environmental Health Perspectives Supplements*, Volume 107, Number S6, December 1999, pp 907-938.

[2] Kolpin, E.W., Furlong, E.T., Meyer, M.T., Thurman, E.M. Zaugg, S.D., Barber, L.B., et al. (2002). "Pharmaceuticals, Hormones, and Other Organic Wastewater Contaminants in U.S. Streams, 1999-2000: A National Reconnaissance." *Environmental Science & Technology*, Volume 36, Number 6, pp 1202-1211.

[3] Daughton, C.G. (2002). "Environmental Stewardship and Drugs as Pollutants." *Lancet*, Volume 360, pp 1035-1036.

[4] Daughton, C.G. (2003). "Cradle-to-Cradle Stewardship of Drugs for Minimizing Their Environmental Disposition While Promoting Human Health: Rationals for and Avenues Toward a Green Pharmacy." *Environmental Health Perspectives*, volume 111, Number 5, pp 757-774.

[5] Daughton, C.G. (2001). "PPCPs as Environmental Pollutants" U. S. Environmental Protection Agency, National Exposure Research Laboratory, Environmental Sciences, <http://www.epa.gov/nerlesd1/chemistry/pharma/faq.htm>



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August 2007

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Debbie Segroves is now responsible for approving Helper and Temporary applications. Please contact her at debbie.segroves.state.ok.us or (405) 702-8173.

NTNC Classes

Nontransient Non-Community (NTNC) public water systems serving 3,300 persons or fewer are now required to have a certified operator. There is free training available for any NTNC system that does not have a certified operator. Call Kristi Sanger at (405) 702-8144 for further information.

California State University, Sacramento (CSUS) offers correspondence courses for operators. For information, please call CSUS at (916) 278-6142.

Michigan State University (MSU) offers two management courses. For information, call (800) 356-5705.



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