

Featured Career Opportunities

Water/Wastewater Treatment Plant Operator

Water treatment plant operators treat water so that it is safe to drink. Wastewater treatment plant operators remove pollutants from wastewater so it is safe to return to the environment. Both operators play an important role in our daily lives. To us, we open the kitchen tap and there is the water. We never stop to think how it gets to our house.

Operators in both types of plants control equipment that removes or destroys chemicals, bacteria, or other harmful materials in the water. Although the specific duties of plant operators depend on the type and size of the plant, typical duties include : operate/ maintain pumps and valves, read and adjust various types of instrumentation which control equipment and processes, operate chemical feed systems, perform lab analysis, troubleshoot process upsets and maintain records.



Water pollution standards have become stricter. Federal laws regulate the purity of drinking water and wastewater. The list of contaminants that are regulated by law has grown over time. Operators must be familiar with these laws and updates, and know how they affect their plant. They must also be aware of local and state guidelines.

According to the Bureau of Labor Statistics, Water and Wastewater Treatment Plant and System Operators are listed as #2 for the top 10 blue collar jobs (based on current salary medians and expected growth by 2014); Employment in this sector is expected to increase 9-17%!

Requirements:

- High School diploma or equivalent; Course work for certification eligibility; College level math and/or science is very helpful.
- Responsible individual with a basic understanding of math and science, willing to work shifts, attention to detail, mechanical aptitude, willing to learn.

If you fit these qualifications, then this rewarding career is perfect for you!

Civil Engineering: An Exciting Career with An Incredible Past

From the pyramids of Egypt to the exploration of space, civil engineers have always faced the challenges of the future—advancing civilization and building our quality of life.

Today, the world is undergoing vast changes—the technological revolution, population growth, environmental concerns, and more. All of these create unique challenges for civil engineers. The next decades will be the most creative, demanding, and rewarding times for civil engineers, and now is the best time to find out if civil engineering is the right career for you.

Civil engineers are in the forefront of technology. They are the leading users of sophisticated high-tech products—applying the very latest concepts in computer-aided design (CAD) during design, construction, project scheduling, and cost control.

Civil engineering is about community service, development, and improvement. It involves the conception, planning, design, construction, and operation of facilities essential to modern life, ranging from transit systems to offshore structures to space satellites. Civil engineers are problem solvers, and there are many civil engineering disciplines — two that are at the forefront today are environmental engineering and geotechnical engineering. Environmental engineers translate physical, chemical, and biological processes into systems to destroy toxic substances, remove pollutants from water, reduce non-hazardous solid waste volumes, eliminate contaminants from the air, and develop groundwa-

ter supplies. Geotechnical engineering is the discipline designed to deal with infrastructure in earth materials like tunnels.

Requirements:

- A well-rounded education with a solid background in English, algebra, plane geometry, trigonometry, advanced mathematics, chemistry, physics, and a foundation in history, social studies, or foreign language.
- Computer courses are highly recommended.
- After high school, you may choose from hundreds of institutions that offer accredited civil engineering or technology programs.

— Excerpt from American Society of Civil Engineers

The Celebration of Teaching & Learning is Back!

March 6 & 7, 2009 at the Hilton New York

Thirteen/ WLIW21 has just launched the 2009 Celebration of Teaching & Learning Web site, which will feature hosts Alan Alda, Temple Grandin, Sir Kenneth Robinson, Eric Schmidt and the new cast of Sesame Workshop's "The Electric Company."

In 2009 they will bring exciting news and speakers from the worlds of Science, Math, Technology, Global Awareness, Literacy, Autism, English Language Learners and Whole School Policy.

Keep an eye out for updates and visit thirteencelebration.org often to interact with speakers, make your voice heard, and learn about key conference information.

From your friends at Thirteen& WLIW21



Classroom Activities

Attention teachers — here are some ideas for class projects to help get students thinking about engineering.

Report Writing: Athletes and Gravity

Students write a biographical sketch of an artist or athlete who lives on the edge, riding the gravity wave, to better understand how these artists and athletes work with gravity and manage risk.



Design a Thermostat

Students investigate circuits and their components by building a basic thermostat. They learn why key parts are necessary for the circuit to function, and alter the circuit to optimize the thermostat temperature range. They also gain an awareness of how electrical engineers design circuits for the countless electronic products in the world.



The Beat Goes On

In this activity, students learn about their heart rate and different ways it can be measured. Students construct a simple measurement device using clay and a toothpick, and then use this device to measure their heart rate under different circumstances (i.e., sitting, standing and jumping). Students make predictions and record data on a worksheet.



Design a Parachute

After a discussion about what a parachute is and how it works, students create a parachute using different materials that they think will work best. The students will test their designs, which are followed by a class discussion (and possible journal writing) to highlight which paper material worked best.



Go to: <http://blogs.asee.org/geoengineering>

NYSDEC/NYWEA Poster Contest Topic: The Importance of Wastewater



Know any artistic Middle and High School students? They're invited to show how wastewater treatment plants must protect our waters! For more information, visit the NYWEA website at www.nywea.org.

Websites of Interest

www.nywea.org - Website of the New York State chapter of the Water Environment Association.

www.nyweametro.org - This is the Metropolitan chapter website of the New York Water Environment Association.

www.dec.ny.gov - The New York State Department of Environmental Conservation has launched a new electronic newsletter, DEC Outdoor Discovery. Each issue introduces subscribers to a seasonal environmental or nature topic, suggests a related activity, and lists family-friendly events at DEC's environmental education center. To subscribe, go to the website above and click on DEC Outdoor Discovery.

www.epa.gov/teachers - This is EPA's newly revised and improved environmental education website for teachers. One new feature is the addition of grade levels for the cited classroom materials.

www.epa.gov/fishadvisories/kids - EPA website for kids.

www.teachengineering.com - Teach Engineering is a multi-university partnership that has developed K-12 engineering education curriculum modules that are standards-based, free and available over the internet. It aims to equip teachers with lessons in science, math and engineering that are creative and exciting.

www.science.nsta.org - National Science Teachers Association newsletter. Each issue is filled with informative articles.

www.wef.org/LearnAboutWater/ForEducators/CurriculumMaterials/. The Water Environment Federation has many children's publications including Water the Amazing Journey "Go With The Flow", and "World-wide Waste, It's not a Load of Rubbish".

www.engineeringk12.org - Go Engineering's e-newsletter is for K-12 educators. Its purpose is to promote the importance of engineering and technology education and explore ways of making mathematics and science come alive for students.

www.pbs.org/journeytoplanetearth - Funded by the National Science Foundation, Journey To Planet Earth is a video series that helps students and adults understand the most critical and timely issues facing the natural sciences.

www.epa.gov/watersense/water/drop.htm - The WaterSense program announces an exciting new set of educational materials for kids and teachers "A Day in the Life of a Drop" teaches students about the connections between the sources of the water they use and how that use affects human health and the environment. Fun learning materials include a teachers guide, two student worksheets, a spreadsheet to track water use at home, and a pledge for students and their families to filter out bad water habits.



International Year of Sanitation – 2008

Sanitation is the most important medical advance since 1840, according to a reader survey in the British Medical Journal. Improved sanitation reduces cholera, worms, diarrhea, pneumonia and malnutrition, among other illnesses that cause disease and death in millions of people. Today, 2.6 billion people, including almost one billion children live without even basic sanitation. Every 20 seconds, a child dies as a result of poor sanitation. That's 1.5 million preventable deaths each year.

To put the spotlight on sanitation, the UN General Assembly declared the year 2008, the International Year of Sanitation. The goal is to raise awareness and to accelerate progress towards the

Millennium Development Goal(MDG) target to reduce by half the proportion of the 2.6 billion people without access to basic sanitation by 2015.

To learn more about what you can do, go to <http://esa.un.org/iys>.



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Leading the Way in Water Quality Management

Upcoming Events Mark your Calendar!

NYWEA 81st Annual Winter Meeting

February 1 - 4, 2009 at the
Marriott Marquis in New
York City

NYWEA Offers \$19,000 in Scholarships!

The New York Water Environment Association will be offering a total of six \$1,500 scholarships and one \$10,000 scholarship in 2009.

2009 \$10,000 Environmental Career Scholarship

The \$10,000 scholarship is paid out over four years. Recipient must be:

- A qualifying high school senior
- A New York State resident
- Enrolled full-time in a B.S. or B.E. degree program with an environmental emphasis.

Application deadline: January 22, 2009

2009 \$1,500 Scholarship Application Package

- Two(2) \$1,500 scholarships are granted to children of members

- Two (2) are granted to students enrolled at a college or university where there is a NYWEA student chapter, and
- Two (2) are granted to high school students who will be enrolled in an environmentally related program in a four year college or university.

Application deadline: January 22, 2009.

2009 N.G. Kaul Memorial Scholarship

The N.G. Kaul Memorial Scholarship Fund will be offering a total of \$2500 in scholarships to students pursuing graduate or doctoral degrees in environmental/civil engineering or environmental science concentrating on water quality who show a commitment to government service.

Application deadline: February 28, 2009.

Competition: 2009 U.S. Stockholm Junior Water Prize

The International Stockholm Junior Water Prize (SJWP) is the most prestigious youth award for a high school water science research project. Its purpose is to increase youth attention toward the water environment, and to sensitize them – as future leaders - to local and global water challenges. HRH Crown Princess Victoria is the patron of the prize. In a royal ceremony, during World Water Week, the international winner receives \$5,000 USD and a blue crystal sculpture.

The SJWP was founded by the Stockholm Water Foundation and is administered by the Stockholm International Water Institute (SIWI). ITT Industries is the global sponsor. In the U.S., the Water Environment Federation (WEF), and its member associations, sponsor and organize the state and national competition with support from ITT Industries and The Coca-Cola Company.

For more information go to <http://www.wef.org/LearnAboutWater/ForStudents/SJWP/CompetitionInformation.htm> or www.sjwp.org

Deadline for entry is April 15, 2009, or as indicated on State Competition Deadlines and Special Awards.



EnviroEd

PUBLISHED BY THE PUBLIC EDUCATION COMMITTEE OF THE NEW YORK WATER ENVIRONMENT ASSOCIATION, INC.
www.nywea.org

Fall 2008



Message From the Vice Chair

The NYWEA Public Education Committee publishes this newsletter twice a year to engage young people in careers related to water quality

such as engineers, biologists, chemists, treatment plant operators, managers, laboratory technicians, government officials and many others. In an effort to improve the newsletter and make it more useful to our readers, the NYWEA Public Education Committee has decided to feature career opportunities in each issue.

In this edition of our newsletter, we have highlighted: two possible career paths, some fun classroom activities, information on the Stockholm Junior Water Prize competitions, links to interesting educational web sites, and some important information on scholarships available through NYWEA.

Something else we would like to make you aware of is the Water Environment Federation public outreach initiative, "Water is Life and Infrastructure Makes it Happen." The initiative is an on-going public education program of the Water Environment Federation (WEF) with support from the National Association of Clean Water Agencies(NACWA). Please visit the Water is Life web site at <http://www.wef.org/Wil/home> to learn more about "Liquid Assets The Story of Water Infrastructure," a 90 minute documentary project, produced by Penn State Public Broadcasting that highlights the current state of our nation's essential water, wastewater and stormwater infrastructure. We encourage you to contact your local PBS station to urge them to run the documentary during popular programming hours.

Please contact Beth Petrillo, Vice-Chair at bpetrillo@dep.nyc.gov if you would like previous newsletters emailed to you or if you have any suggestions on how we can improve the newsletter.

Beth Petrillo, Vice Chair

Spotlight on Schools

Urban Assembly New York Harbor School, Bushwick, Brooklyn

The mission of this school is to raise academic achievement by connecting students with the harbor that surrounds the city. The school's founders say that by learning about the vast estuary—its history, its fish, its ecology—and by developing the skills to navigate it, students can gain confidence.

The College preparatory curriculum emphasizes science, technology and the environment, and hands-on training in everything from boat building to water-quality testing with the idea that graduates might become the next generation of boat captains, water resource managers and scientists. The big draw for students are the regular trips on the historic Lettie G. Howard Schooner and other boats that navigate the Hudson, Harlem, Bronx, and East Rivers, the Gowanus Canal and Newtown Creek.

The school has 390 students in grades 9 to 12, 70 percent Latino and 30 percent African American with many from the Caribbean. The graduation rate is 63% while the city-wide average is about 50%.

Ypsilanti Public Schools - As reported in Michigan's Ann Arbor News, the Ypsilanti Public Schools and the University of Michigan College of Education(UMCOE) will offer fourth and fifth grade students at Adams Academy, the opportunity to add engineering to their list of subjects to study.

Tech Academy - California's Morgan Hill Times reports that the Tech Academy, a "three-week program sponsored by different universities and the Santa Clara County Office of Education", helped sixth-grade and middle-school students explore and improve skills to pursue college level work in the engineering and technology fields. The academy's purpose is to expand student participation in math and science. Those who completed the program receive a certificate and can be invited to attend the 2009 Summer Engineering and Technology Academy for advanced students.

Kansas Schools - Kansas officials, engineering industry representatives and Wichita State University are looking to boost technical training in public schools in an effort to stave off an exodus of state engineering jobs(as reported by AP). The effort will begin next fall if Wichita State University is successful in getting a \$2 million grant from the Knight Foundation to expand pre-engineering and other science courses, first in three Wichita public schools and then beyond.