Online Training: Headaches to Solutions

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Abstract:

Alternate training technologies are being evaluated with increasing interest in distance education and online training. Evaluations prove the benefit of distance education because of limited staffing, shrinking budget dollars for travel to short schools and conferences, and the convenience of online training selections and availability. In many industries today, distance education has become the staple for training new employees, management trainees, and supervisor related functions of company policies, operations, and management. The water and wastewater treatment plant operations field is beginning to evaluate these alternatives, as the cost of technology is more affordable and the availability of this type of training is becoming more widespread.

This paper will present steps taken to evaluate and implement an online training program for water and wastewater treatment plant operators. Included are planning parameters, program design, software selections, server and system requirements, an evaluation of the efficacy of online versus classroom training, drawbacks and problem solutions, and the compatibility of Learning Management Systems (LMS).

The presentation will provide a comparative study of four leading online providers within the water and wastewater field. The study will include a comparison of online to classroom, pro's and con's, cost, and benefits. In addition to the provider study, our discussion includes comments and suggestions from operators, state administrators, utility managers, and training coordinators to provide an overview of the transfer of knowledge. A discussion of the challenges facing online training which includes standardization of LMS, course development, and the tracking and monitoring requirements of the students' performance. Questions of these challenges include: How is this being accomplished, How is the training being retained, and What tools are utilized, as continuing education programs continue to evolve.

Keywords: Distance Education – Online Training – Knowledge Management

Why are we here? What has bought us together? Where are we headed?

Water and wastewater treatment plant operators have allot of be thankful for and many benefits which go unrecognized. Today, many large organizations and their pension plans have caused major fear in individuals preparing to retire, increased attention to performance have many running to cover up their mistakes, and others count their blessings for making the right decisions early in life.

Operators have many benefits to be thankful for and opportunities to take advantage of. Looks at your retirement plan – state sponsored – health care protected, no cutbacks, no reductions in staff, only awareness of top performance individuals to promote in the coming years, as many mentors and administrative retire and leave the ranks of the utility operations.

Many times, we look at education and training without really understanding the benefits associated with the requirements. Why did it start? When did it start? Why is it important? Is training a benefit or waste?

In searching the country, Where did Operator Training begin? I have journeyed to California – to Ken Kerri, Florida – to Bill Engel, EPA in Washington to Bernita Sparks and Ken Hay, to many others including the Associations of Boards of Certifications. The awareness of our environment, the act to begin cleaning it up, and true beginning of the wastewater construction grant program began during the Nixon Administration in the late 1960's and formed the United States Environmental Protection Agency in 1970. Formerly a division of the Department of Interior housed as the Division of Water Quality.

In the early 1970's, the Nixon Administration created the funding of millions of dollars through the USEPA to construct wastewater treatment plants to begin the clean-up of our waterways and environment. As these massive facilities were under construction, the thought of who will operate these facilities, who's going to change the chlorine cylinder, who's going to record the flows, were the horror of the "Big White Elephants". Ken Hays of the USEPA undertook the task to create a plan to train operators? His discussions of whether to include university instructors vs. operator taught to become instructors were the foundation to training programs of today. The evaluations of education side vs. training side became the main port of development, as he laid out the four key steps for Operator Training, the Need-to-Know Criteria:

1. Must to Know
2. Should to Know
3. Nice to Know
4. Related Information

Along the way, the 1977 Clean Water Act gave Hays the funding required to develop the Need-to-Know criteria through the development of state training centers and training manuals. The first Teacher's manual and later known as correspondence courses were created by Ken Kerri. The approach which Hays and Kerri took was to

“keep it simple” and pinpoint the Need-to-Know criteria which operators across the country would understand and utilize. In the 1973, the USEPA developed the first technical manuals which are the foundation of todays’ start-up manuals, O & M manuals, and procedures for staffing and certification of treatment plans. These manuals are referred to as MO # 1 through MO # 8 produced in 1973 with revisions and additions to these original documents in 1979. Some proceed the manuals to be technically orientated which related to engineers and design aspects, than fundamental and operational. Thus, Ken Kerri created the Sacramento courses which were originally funded by USEPA to provide an operators viewpoint and practical approach to operating wastewater treatment plants. Later, in the 1980’s Ken Kerri developed the drinking water manuals which mirrored his original work with Hays of the USEPA.

Ken Kerri, who received his doctorate degree from Oregon State in 1965 in Sanitary Engineering, has been called the “Godfather to the Correspondence Courses”. Dr. Kerri became some his career in water and wastewater treatment in 1956 working for the US Public Health Service as an assistant Sanitary Engineer. A true friend to the operating community, where he has developed and administered training programs for over forty years. His publications, books, presentations, and programs are too numerous to mention, however he is truly a pioneer in the Operator Training.

Prior to the development of the Sacramento courses, two universities (University of Arizona and Clemson University) had developed the very first correspondence manuals in the late 1960’s. In addition, Texas and New York State created some training manuals prior to the development of the state community college program in the 1950’s and 1960’s, establishing the first Operator Training Short Schools. With the USEPA funded state training centers, the Need-to-Know criteria followed through with the pilot testing of 3 community colleges in their development of:

- Standardized criteria
- Pollution Abatement Technology
- Hands-on training
- On-the-job training

The three community colleges selected by USEPA were Linn Benton Community College in Oregon, Greenville Technical College in South Carolina, and Charles County Community College in Maryland. The community college training programs and methods were built into the curriculum and made part of the academic requirements to obtain an associate’s degree and created the ceu’s requirements of today. One of these community college programs was developed by Bill Engel, spearheading the Charles County Community College starting 1969. As a licensed operator and managing the on-site safety assessment of the Blue Plains 399 MGD activated sludge facility for Washington, DC, Bill become very active in developing a Wastewater Operator training program in Maryland and DC which lead to his directorship at the Maryland State Training Center and Charles County Community College. This led him to the developed of the South Carolina Environmental Training Center from 1983-1994 in Sumter, South Carolina and 1994 to date, as the director of the TREEO Center at the University of Florida. The UF/TREEO Center annually presents over 280 short courses, seminars, workshops, and conferences.

In a recent article written by Engel addressing the evolution of Operator Training in the magazine: Florida Specifier, Engel writes…. in the 1980's, regulations were passed in solid and hazardous waste management, asbestos abatement and air quality. Operators and technicians saw their job descriptions expand as a result of these new regulations. This increase in responsibilities required training in more than one environmental field, creating a new era of cross-trained employees.

At the same time, federal and state funding for environmental training programs decreased. This caused training centers to rethink their operations and begin functioning as revenue-generating businesses. It was during this period of time that the environmental training business first became competitive stated Engel. Consulting firms began to recognize training as a business development opportunity, as more and more regulations were promulgated. Associations also began increasing training as a service for their members and as a revenue generator. This forced the non-profit training centers to become self-sustaining and compete with the more sophisticated consultants and associations.

Engel went on to state, since the 90's, public pressure and increased regulations have made environmental preservation and sustainability a popular topic in environmental training. The environmental manager's responsibilities expanded beyond simply maintaining compliance. Meeting the permit was not good enough anymore; it was necessary to look at energy conservation, risk assessment, pollution prevention and waste reduction, as well as other "beyond-compliance" areas. The introduction of the ISO 14001 Environmental Management Standard was another significant development of the 90's. ISO 14001 requires that environmental managers use process management to direct environmental operations and introduced the concept of directing an organization by processes rather than individuals. According to Engel, this new way of thinking requires cross-training employees to develop a workforce capable of operating within a process rather than a specific job function…..Like most other industries, environmental training was radically affected by the introduction of personal computers and the Internet in the 1990's. The days of buying expensive books, photocopying, cutting and pasting training visuals to deliver via projectors have gone by the way of the dinosaurs. For further discussion of Engel's article, refer to the www.enviro-net.com article entitled: Environmental training evolves to meet demand, adjusts to advancing technology.