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Editorial Open Access

The Quality Movement in Water Treatment

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Public health and water quality management involve the leveraging of channel wide integration to better serve public needs. Increases in productivity and quality control with continuous improvement will follow when water treatment managers implement and coordinate quality management activities upstream. Further, they should recognize anew the aspects of quality control and quality assurance programs require two duties to be undertaken. First, we refer to the process whereby measures are taken to make sure defects in services are not part of the final output, and that the output meets quality and acceptable health standards. Second, one may observe that quality assurance entails overlooking all aspects, including design, development, service, installation, as well as documentation. The Quality movement is the field that ensures that management maintains the standards set and continually improves the quality of the output. The quality movement offers users sound lessons that can be very powerful to address health and water treatment lessons. Instead of final, end-service source inspection, the quality movement emphasizes prevention, total quality management, source inspection, process control and continuous improvement. These are all ingredients for successful and effective ways to manage and mitigate the risks in public health applications such as water quality control.

Water quality control is classified as a continuous process that neither falls asleep nor stops. This continuous process must be checked at all positions along the supply chain from the original source of water to the ultimate use by the public. As a public health issue, imperfect law on this subject will provide for waste, health calamities and serious deletion of the health of acommunity, nation and economy. Multitudes of examples exist whereby the nation's healthy water supply diminishes and the nation's populace is seriously affected.

While public health programs are so crucial to the general health of society, these water quality systems must be sustained by both preventative and emergency measures. Others propose sophisticated strategies for dealing with problems in an environment where service flows continue over time.

Studies of principle agent models consider consumers' quality evaluations and the suppliers' quality prevention level decisions. Such studies produce results are often not examined by the practitioners of quality management in water quality. Threats to water quality are real and many measures must be developed to indicate when water quality and similar processes are not operating in an efficient and productive manner. These measures include those of statistical process control (SPC) which indicates when risks are present in the inspection processes in water treatment and public health programs. Since public health and water quality programs are increasingly globalized, these SPC measures must be strategically incorporating into inspection and monitoring programs. The choice of a particular SPC procedure is critical in developing an optimal plan.

Most SPC methodologies assume a steady state process behavior where the influence of dynamic behavior either does not exist or is ignored. The focus is on the control of only one variable at a time and distinguishes between Phases I [analysis of historical data] and II [monitoring quality levels]. Specifically, SPC controls for changes in either the measure of location or dispersion or both. SPC procedures as practiced in each phase may disturb the flow of the service production process and operations. In recent years, the use of SPC methodologies to address continuousprocesses where behavior is characterized by more than one variable is emerging. The purpose of these procedures called multivariate process control promise to improve the monitoring and detection of significant changes in water quality. In addition, they allow water quality managers to ascertain where the malfunction originates.

Methods focusing on the average run length (ARL) are useful for maintaining and continuously improving the quality of the supply chain for water distribution. Further, ARL standards may create an atmosphere for standardization of water quality improvement programs. Last, some researchers that study water supply programs introduced a new standard, average time to signal (ATS). This criterion comes from studies or other supply chains in industry and commerce. Whatever the source of these creative methods, public health in water treatment will be more useful when the processes are multivariate, dynamic or both. Multivariate quality control provides many of the new tools for adaption in improving health and water quality. The costs of, stoppages and threats to the public health will diminish when managers explore the usefulness of multivariate methods. Last, these quality analysts must be trained, retrained and continually trained in those methods that best fit the supply chain environment in public heal and water treatment. Simple Shewhart quality methods often applied in previous years are no longer sufficient to manage in the global environment of public health. The intensive use of automatic data acquisition system and the use of computing for process monitoring have led to an increased occurrence of monitoring processes that utilize statistical process control. These analyses are performed almost exclusively with multivariate methodologies. Often, today, analysts utilize G charts when one desires to monitor the number of opportunities or, in many cases, the number of days between rare events, such as infections and other complications. Last, mathematical modelers in recent year have made great strides in predicting rare events. This modeling method may show promisein the future to explain and identifying rare events and is likely to produce newer and better methods for improved quality control methods. Methods for treating the cases of rare events in many manufacturing applications have similar statistical properties as those in water treatment.

Although the public has great faith in the writing of more perfect

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law to regulate, improve and maintain high quality of water treatment programs, there are great forces in America which want those laws to be imperfect. As long as one political party in America believes that governments (local, state and federal) can never implement more perfect law, than water supply, maintenance and quality will be in jeopardy. At that time, blame is all that goes around and public planning is ignored.

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