

**A QUALITY CONTROL PROGRAM
FOR THE OFFICE OF THE ILLINOIS STATE FIRE MARSHAL**

EXECUTIVE LEADERSHIP

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An applied research project submitted to the National Fire Academy
as part of the Executive Fire Officer Program

September 2001

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ABSTRACT

The Office of the Illinois State Fire Marshal (OSFM) Division of Fire Prevention (DFP) conducts thousands of annual code enforcement inspections. The DFP's enforcement program suffered from what was perceived by OSFM management to be a high number of errors in the application of adopted codes. The problem was that benefits of a formalized quality control program (QCP) had never been investigated by the agency. Therefore, the OSFM may have been missing an opportunity to increase code enforcement effectiveness as the result of unfamiliarity with QCPs.

The purpose of this research was to identify whether recognized methods of quality control used in private business environments or other public agencies were applicable or adaptable to the OSFM as a method of enhancing code enforcement effectiveness. The research questions asked were

1. How can a QCP benefit the OSFM's DFP?
2. What factors are important to the establishment and operation of a QCP?
3. Are QCPs developed for the private sector applicable to public agencies, and fire service code enforcement agencies in particular?
4. How are QCPs used in other fire service code enforcement agencies?
5. How can a QCP be implemented in the OSFM's DFP?

Historical and evaluative research was conducted. An extensive literature review was performed. Survey instruments were sent to all states as well as fire departments exercising jurisdiction over the 30 largest U.S. cities. A survey was also conducted of fire departments that have had an Executive Fire Officer Program (EFOP) graduate within their administration to determine their extent of familiarity with, or use of, QCPs.

Results identified a variety of QCPs and quality concepts. Consistent in relevant literature was the need for public agencies to consider those they serve as "customers," even in a regulatory environment. Also revealed was a need for management to support the QCP and the necessity of allowing employees to be a part of the QCP formulation and application process. Furthermore, the work revealed a perception by experts that QCPs developed in the private business arena were applicable to the public sector. However, survey results revealed that the application of QCPs to public fire prevention enforcement programs has not been well explored and few fire service agencies at either the state or local level could be identified as using a QCP.

Resulting recommendations included (a) changing the focus of DFP management from judging performance based upon the number of inspections completed, to one in which the accuracy of the work is considered, (b) establishing a method to gather customer satisfaction data, (c) forming a joint OSFM labor-management committee to develop a formal QCP, (d) developing inspector specialists to handle less frequent inspections at more challenging occupancies, and (e) establishing a reward system to recognize quality inspector performance.

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TABLE OF CONTENTS

	PAGE
Abstract.....	3
Table of Contents.....	5
Introduction.....	7
Background and Significance.....	9
Literature Review.....	15
Procedures.....	64
Results.....	70
Discussion.....	73
Recommendations.....	77
References.....	81
Appendix A Applicable Illinois Fire Safety Laws, Rules, and Codes.....	89
Appendix B 2000 OSFM Inspections by Occupancy Classification.....	91
Appendix C Survey of Fire Agencies.....	93
Appendix D Cover Letter for Fire Agency Survey.....	97
Appendix E Follow-Up Cover Letter to Survey Non-Respondents.....	99
Appendix F Survey Results of Quality Control Program Experience.....	101
Tables	
Table F1 State Fire Agency QCP Experience.....	101
Table F2 Major U.S. City Fire Department QCP Experience.....	108
Table F3 Random EFO Graduate Fire Department QCP Experience.....	112

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INTRODUCTION

The supporting divisions of the Office of the Illinois State Fire Marshal (OSFM) are responsible for a variety of programs designed to accomplish the agency's mission statement: "To reduce death, injury, and property loss of Illinois citizens from fires, explosions, and other hazards" (OSFM, 2001a, p.1). Principal among these programs is the OSFM Division of Fire Prevention's (DFP) efforts to enforce Illinois laws and adopted administrative rules pertaining to fire prevention and fire safety. The importance of the DFP's work is reflected in the agency's primary goal of "Protection through Prevention" (OSFM, 2001a, p.1).

The DFP is responsible for the enforcement of myriad fire prevention laws and rules designed to enhance fire safety in diverse occupancies and installations. As indicated in Appendix A, DFP inspectors are required to be familiar with, and apply, more than a dozen fire prevention laws, standards, and adopted rules including two editions of the National Fire Protection Association's (NFPA) Standard #101 *The Life Safety Code (LSC)*. In addition, in an effort to ensure that referenced codes and standards pertaining to fire prevention enforcement remain current, the DFP has identified the adoption of the latest available edition of the NFPA's *LSC* as a primary goal for the 2001 fiscal year that began July 1, 2001 (J. Ahern, personal interview, June 25, 2001).

The OSFM DFP has recognized problems relative to code enforcement in recent years as the presumed result of several factors. Most notably, the expansion of services offered by the DFP has caused fire prevention inspectors to necessarily increase the number of codes and standards with which they must be familiar. Furthermore, inspectors of the DFP are hired by the OSFM predominantly after they have served a lengthy career with some other fire service agency (municipal fire department or fire protection district) in Illinois. The majority of inspectors hired by the DFP begin work at the OSFM without having prior experience enforcing the majority of state codes or the various editions of the NFPA *LSC* adopted by the OSFM (J. Ahern, personal interview, April 15, 2001). Also, despite an increasing workload over the past years, a 1995 reduction-in-force as the result of a budget shortfall in the OSFM's operating fund has since left the DFP understaffed.

Instances of improper code application (e.g., applying the wrong edition, section, or requirements of a particular code; use of the wrong inspection form; and conducting inspections outside of acceptable scheduling dates; etc.) are not formally documented. The increase in errors relative to these parameters is a perceived "feeling" based upon comments of regional office administrators responsible for monitoring the work of inspectors, as well as the deputy state fire marshal for fire prevention who is responsible for answering legal appeal requests relating to code enforcement errors (J. Ahern personal interview, April 15, 2001, and L. Harrison personal interview, April 15, 2001). Furthermore, there is currently no formal process in place to monitor customer satisfaction relative to code enforcement work.

The history, benefits, and application of a quality control program (QCP) are explained in detail in the "Literature Review" section of this research paper. Suffice it to say however, that the establishment of a QCP that cannot only accurately measure the degree of error in a code enforcement procedure but also effectively assist in correcting such errors, is a needed tool for

the OSFM DFP and the fire service in general. The problem is that despite the perception by DFP management that code enforcement work suffers from low quality, the benefits of a formalized QCP have never been investigated for the agency.

The OSFM DFP currently performs fire prevention inspections in over 20,000 occupancies on an annual basis. In addition, plan review services to determine code compliance of proposed building construction, additions, and remodeling projects are offered at no charge to owners, architects, and contractors (OSFM, 2001b). Therefore, allowance for even a small percentage of mistakes or errors in the inspection or processing of inspection forms relating to these occupancies could have potential legal, public relations, and financial consequences for the DFP. As a result, the ability to identify a reliable QCP with code enforcement applicability will have statewide political, financial, labor, and fire safety implications.

The ultimate purpose of this research is to assess whether it is feasible for the OSFM to adopt or adapt, and effectively utilize a QCP as a method of enhancing quality control for the DFP's code enforcement workforce. Identifying the QCPs most commonly applied in private industry, and investigating the adaptability of those QCPs to performance enhancement in public agencies will do this. The experience of other state fire code enforcement agencies as well as the fire departments of the largest municipalities in the United States will be surveyed to gain first-hand knowledge of any QCP innovations or processes found to be effective in code enforcement work. Furthermore, the implications of not adopting a QCP for the DFP will be addressed.

Specifically, the research attempts to examine the issue through a variety of methods including (a) identifying through literature review and historical research the past development and current state-of-the-art of QCPs; (b) examining the difficulties in applying traditional quality control instruments used in private industry to the fire code enforcement environment; (c) surveying the fire agencies of other states and large municipalities in an attempt to identify the experience, practices, and priorities of those agencies relative to application of QCPs; (d) randomly surveying fire departments where an Executive Fire Officer Program (EFOP) graduate could be identified as having served in the fire department administration to determine if they had any exposure to, or experience with, QCPs for their code enforcement work; (e) consulting with experts from the NFPA and model code organizations to determine if they have developed formal QCPs related to the enforcement of their codes and standards; and (f) identifying viable alternatives available to the OSFM's DFP for assuring quality control in the execution of code enforcement services.

Material presented at the National Fire Academy's (NFA) *Executive Leadership* (EL) course will be applied (see the "Background and Significance" section for an explanation of the relationship between the research and the course material). The specific research questions to be addressed are

1. How can a QCP benefit the OSFM's DFP?
2. What factors are important to the establishment and operation of a QCP?
3. Are QCPs developed for the private sector applicable to public agencies, and fire service code enforcement agencies in particular?

4. How are QCPs used in other fire service code enforcement agencies?
5. How can a QCP be implemented in the OSFM's DFP?

BACKGROUND AND SIGNIFICANCE

History of the OSFM and Uniqueness of Funding

The OSFM was established in 1909 as a subdivision within the Illinois Department of Insurance. In the following decades, control of the Office was transferred to various other state agencies including the Department of Trade and Commerce, the Department of Public Safety, and the Department of Law Enforcement (J. Pavlou, personal interview, May 28, 2001). In 1977, the Illinois State Fire Marshal Act established the OSFM as an independent state agency under the direction of a State Fire Marshal who is appointed by the Governor of Illinois (Illinois State Fire Marshal Act, 1977).

The Illinois Fire Investigation Act specifically states that, in addition to other duties, the OSFM shall

Adopt and promulgate such reasonable rules as may be necessary to protect the public from the dangers of keeping or maintaining in a building or on a premise combustible or explosive material or inflammable conditions that endanger the safety of said buildings or premises. Such rules shall require the inspection of necessary fire extinguishers, fire suppression systems, chemical fire suppression systems and fire alarm and protection devices (Illinois Fire Investigation Act, 1975, p. 2).

Today, the OSFM has evolved into a state agency that serves the citizens of Illinois through six divisions including the DFP (OSFM, 2000a). The agency is headquartered in the state's capital city of Springfield, Illinois. Field offices serving the needs of the agency's various divisions are located in Chicago, Marion, Rockford, and Des Plaines, Illinois. The OSFM currently employs 156 full-time employees along with a number of part-time and contractual workers as well as college interns (D. Williams, personal interview, May 21, 2001).

The OSFM's budget for fiscal year 2001 totaled \$13.7 million. This included \$9.8 million for personnel wages and benefits and \$1.5 million in training reimbursement grants distributed to local fire departments and fire protection districts (OSFM, 2001a). Unlike many other state agencies that rely upon apportioned tax dollars from the state's General Fund, the OSFM receives its funding entirely from the Illinois Fire Prevention Fund (IFPF). The Illinois Fire Investigation Act established the IFPF. The Act requires all insurance companies selling fire insurance policies within the state to "be assessed 1 percent of the gross fire, sprinkler leakage, riot, civil commotion, explosion, and motor vehicle fire risk premium receipts collected from policies sold within the state to support the OSFM" (Illinois Fire Investigation Act, 1975, p.1). The law does, however, require the OSFM to distribute large percentages of the IFPF to specific causes including (a) 12.5 percent to the Illinois Fire Service Institute at the University of Illinois, (b) 10 percent to the Chicago Fire Department for maintenance of the city's firefighter

training program, and (c) necessary funds to reimburse local governmental agencies pursuant to the Illinois Fire Protection Training Act (Illinois Fire Investigation Act, 1975).

This unique funding protocol presents particular problems to the OSFM relative to program planning. The IFPF, being directly dependent upon the amount of fire-related insurance sold within the state during the previous year, is subject to year-to-year fluctuations. Furthermore, the OSFM is not exempted from legislative control in the funding and budgeting process. The agency must comply with all procedures and protocol applicable to other state agencies relative to seeking appropriations and justifying budget requests. In 1995, after an adjustment to the methods used by the Illinois Department of Insurance to calculate contributory fire insurance premiums, the OSFM suffered a shortfall in the IFPF that necessitated a 20 percent reduction in the work force. Although additions have been made to many of the OSFM's divisions since the 1995 reduction-in-force, the number of personnel assigned to the DFP has actually decreased as a result of non-replacement of the 1995 layoffs and attrition (J. Ahern, personal interview, May 26, 2001). Awareness of the limitations on funding and the previous reduction-in-force has resulted in OSFM administrators being especially cautious when expanding programs or considering modifications to existing programs or procedures that may have budgetary implications. Although a QCP may be viewed as a new initiative, unlike many new programs it has the potential to identify inadequacies and improve performance of the DFP, thus benefiting the division and the agency.

OSFM DFP

The DFP, by legislative mandate, is charged with "ensuring that no building endangers persons or property by reason of faulty construction, age, lack of repair, or any other cause that would make it especially liable to fire" (Illinois Fire Investigation Act, 1975, p.3). Under authority granted by this Illinois law, the division conducts fire safety inspections and plan review in accordance with administrative rules adopted to ensure fire safety.

The DFP is the largest division of the OSFM in terms of budget allocation and number of personnel. A deputy state fire marshal commands the DFP, with three regional offices located in Chicago, Springfield, and Marion. Each office is operated by a regional administrator and includes a staff of secretarial and clerical assistants. A single fire protection engineer and small subordinate plan review staff is headquartered in the Chicago regional office. Fire prevention inspectors are assigned to one of the three regional offices and conduct fire prevention code enforcement inspections in geographically assigned territories within the region.

Fire prevention inspectors are all full-time OSFM employees and their annual salaries, dependent upon length of service, range from \$37,152 to \$48,348 (Illinois Administrative Code, 2000). The geographical distribution of inspectors across the state often necessitates reliance upon retired personnel from local fire departments to fill OSFM inspector positions. Currently, 96 percent of the OSFM's DFP field inspectors are retired or disabled personnel from Illinois fire departments (J. Ahern, personal interview, May 30, 2001).

Applicable Standards and Adopted Codes

The OSFM enforces a variety of laws, administrative rules, and subsequently adopted model codes and standards (see Appendix A). Essential to occupancy inspection is the NFPA *LSC*. The 1991 edition of the *LSC* is applicable to new Illinois occupancies constructed or converted after November 1, 1993 and the 1985 edition of the *LSC* is applicable to all other occupancies (Illinois Administrative Code, 1993). Unique to *LSC* enforcement compared with most model fire prevention and building codes is the fact that the *LSC* applies to new and existing occupancies. No occupancies or existing conditions are "grandfathered" to allow their continued existence if found to be in violation of the *LSC's* requirements (Lathrop, 1991).

Updating the Illinois Administrative Code to reference the 2000 edition of the NFPA *LSC* has been identified as the DFP's top priority for the upcoming fiscal year (J. Ahern, personal interview, May 24, 2001). Adoption of the 2000 *LSC* would allow Illinois' statewide rules for fire prevention to recognize the latest edition of the NFPA standard. In addition to offering building owners and occupants the advantages realized by referencing the most recent edition of the *LSC*, the rule change would introduce the availability of a formally recognized performance based design (PBD) option. Unless the OSFM chose to specifically exclude the 2000 *LSC* sections that allow PBD in the adoption language, the adoption of this edition of the *LSC* would obligate the agency to consider submitted projects employing a PBD concept. Although beneficial for designers and building owners, the PBD concept would add yet another complicated dimension to the work required to be performed by the DFP workforce.

Occupancy Classifications Inspected by the DFP

Appendix B summarizes, by occupancy classification, the inspections conducted by the OSFM DFP in 2000 (OSFM, 2001b). The table reflects that the occupancy and facility classifications in which OSFM inspectors conduct inspections are many and varied. As a result of the multitude of inspection and regulation responsibilities required of the OSFM by the Illinois General Assembly, OSFM DFP inspectors are required to be "jacks of all trades" in carrying out their inspections. Due to the large geographical area covered by each inspector, the OSFM has approached inspections by requiring the inspector assigned to a geographical area to conduct all inspections in that territory. This necessitates an individual inspector to be familiar with the content and application of a variety of codes, standards, rules, and policies. In a single week an OSFM fire prevention inspector may be required to inspect a day care center, a self-service gasoline station, a motel, an aboveground flammable liquid storage tank installation, a telecommunications switching office, a portable fire extinguisher testing facility, a residential board and care home, county fair booths, and a horse race track (personal experience of the author).

DFP Inspector Training

Fire prevention inspectors of the DFP are provided with continuing education relative to code enforcement issues. A full day training seminar is presented to all inspectors on a monthly basis. This training is conducted in two sessions, one for northern Illinois inspectors at the

agency's Des Plaines, Illinois facility and a second session at the DFP's classroom facility in Springfield to serve central and southern Illinois personnel. The monthly training is arranged by the regional administrators of the DFP, and usually conducted by the agency's fire protection engineer. Three times per year all DFP personnel attend division-wide training meetings, which offer 24 hours of instruction relative to code enforcement, rule interpretation, issuance of new policies or procedures, and general question and answer sessions. The DFP instituted these division-wide training seminars to ensure statewide consistency in enforcement among DFP inspectors and regional office staff.

DFP fire prevention inspectors are not required to be "certified" through the OSFM's own fire prevention inspector or fire prevention officer program which is available to local fire department personnel. Furthermore, certification with nationally recognized model code organization certification programs has not been attempted.

Perceived Quality Problems within the DFP (Recognizing the Problem)

The absence of any formal QCP for the OSFM DFP makes identification of the types of errors being committed, error rates, and the effectiveness of possible solutions all impossible to quantify. However, the experience of the DFP's supervisory staff in checking the daily work of fire prevention inspectors has resulted in a perception of low quality (L. Harrison, personal interview, May 10, 2001). This quality problem exhibits itself in many forms including (a) complaints from occupancy owners about the conduct or appearance of inspectors, (b) identifiable errors relative to application of the incorrect code or citation of incorrect code sections, (c) use of incorrect forms in reporting inspection results, (d) misclassification of occupancies, and (e) an increase in formal appeals filed by occupancy owners as the result of incorrectly cited violations. Unfortunately, although all of these factors are detrimental to the efficiency and effectiveness of the DFP, they are not tracked quantitatively and therefore statistics relative to the number of complaints, errors, or mistakes are currently nonexistent.

A non-scientific examination of DFP inspection work was conducted in the spring of 2001 by the Deputy State Fire Marshal of the DFP and the agency's fire protection engineer (the author of this research). Random inspection files were pulled from the DFP's collection and examined for accuracy (e.g., application of the correct edition of a code, choice of the proper occupancy classification for the building inspected, adherence to code-granted exceptions based upon conditions encountered, choice of the correct inspection form in accordance with standard operating procedures, etc). Astonishingly, it was found that at least one form of error could be detected in one of every two files examined!

Relation to the NFA's *Executive Leadership* Class

This research is being conducted as a required component of the *Executive Leadership* (EL) course in the NFA's Executive Fire Officer Program (EFOP). The issues being studied are related to several concepts presented in the course including (a) a realization that the public management process is more difficult to evaluate due to an increased ambiguity of goals

compared to the private sector; (b) understanding that organizational change is inevitable, but whether that change brings growth is optional and dependent upon the programs and decisions introduced by the organization's leaders; (c) the "Rational Decision Making Model" which recognizes that the quality of decision making can be improved, and its acceptance by subordinates enhanced, based upon the congruence of organizational goals, the degree of problem definition, and the degree of acceptance and commitment necessary from subordinates; (d) that recognized quality traits of public executives include knowledge of the organization and system, knowledge of the applied technology within the agency, and vision and perspective for the agency; (e) the concept of **groupthink**, a negative term coined by Irving Janis that refers to a process whereby group members responsible for program development or decision making suffer from either pressure to conform to the thinking of others in the group or failure to identify the broadest number of alternative solutions to a problem as the result of an unwarranted avoidance of skepticism (Janis, 1971); and (f) an understanding that one of the myths that needs to be dealt with in public organizations is that comfortable behavior equals productive behavior.

Investigation of a QCP for the OSFM's DFP is ultimately a service enhancement to the inspected public. The *EL Student Manual* (NFA, 2000) recognizes the importance of satisfying customers. Specifically referring to public organization leadership, the text states that "leaders have the ability to create and articulate a vision that empowers others to transform vision into action, and are the social architects who build commitments and coalitions and listen to their constituents" (p. SM 2-3).

The NFA *EL Student Manual* also contains several relevant passages that point out the difficulties applicable to the OSFM developing a QCP. For example, the text notes that

The election and appointment process common in government leads to more transient leadership at the top levels and tension with careerists. This makes the public organization more difficult to manage. Programs are difficult to start and to stop due to the need for more extensive lobbying and program approval (NFA, 2000, p. SM 2-4).

Furthermore, relevant to public sector application of QCPs developed and used by the private sector, is the text's content concerning differences in public and private sector leadership and operation. Specifically, the text states that

The need for political behavior often is overlooked by transient leaders moving from the private sector into government. Political behavior often is centered on self (re-election or higher office) rather than on the organization. While this also may be true in business, it is not as accepted or legitimized as in the public sector (NFA, 2000, p. SM 2-4).

Furthermore, the text notes that the key differences in the public sector compared to the private sector include "multiple constituents, political versus objective goals, reaction to public perception, visibility (media, public, work force), and individual performance measure" (NFA, 2000, p. SM 2-6).

Another relevant issue discussed in the class and stated in the *EL Student Manual* (NFA, 2000) is the importance of incorporating a skeptical viewpoint into the decision making process,

especially when the decision making can result in policies or programs that have far reaching effects on the agency or regulated constituents. The course used the Kennedy White House decision making methods in the Bay of Pigs Invasion and the Cuban Missile Crisis as examples of the importance of having a devil's advocate on your advisory staff to raise counter, or at least less popular, points of view concerning policy decisions. Directly related to this subject was the text's statement that "One way to avoid groupthink is to identify the broadest number of alternative solutions possible. Critically evaluate each alternative by defining its advantages and disadvantages" (p. SM 3-6). This is especially relevant when it is considered that the unionized inspector workforce of the DFP will be most affected by the establishment of a QCP.

Also, part of the required reading for the EL class was *Winning 'Em Over* (Conger, 1998). This text addressed several aspects of successful persuasion techniques. The text and the techniques presented therein relate to this research and the development of a QCP for the OSFM's DFP. The political reality of state agency management with an organized and contractually protected workforce is that any program to enhance performance or quality of work will need to have the support of all affected parties--management and labor. As the author pointed out

Addressing opposing viewpoints directly is often the more effective and convincing approach for an educated audience of people who are probably aware of the counter arguments. It demonstrates a realism that makes our viewpoint seem all the more credible. It overcomes any perceptions that we are naive or blind to other perspectives (Conger, 1998, p. 100).

Finally, although the research is directly related to, and supported by, the NFA's EL course, it should be realized that EL is the culminating class in the Academy's four year EFO program. As such, this research incorporates concepts from all courses that comprise the EFO program. The subject of QCP development for the OSFM's DFP is related to the *Executive Development* (ED) course because study of the issue employs many of the concepts presented in the class. Concepts related to problem solving techniques, public marketing, the use of feedback information from data collection systems to determine inspection quality, and the concept of public perception of service qualities were presented in the ED course and all relate to QCP development.

The NFA's *Strategic Management of Change* (SMOC) course included many concepts that relate to QCP development and research. Most notably, the NFA *SMOC Student Manual* (1996) recognized that the governmental or public sector is no longer exempt from change. In fact, the text stated "these organizations are often the hardest hit by change because they are the least accustomed to it" (p. SM 1-6). Directly related to QCP development for the OSFM is another statement taken from the *SMOC Student Manual*:

Recently, the public sector is coping with the same or similar influences as the private sector--downsizing, increased emphasis on outcomes instead of output, and shrinking budgets. In addition, increased awareness and involvement by the public, coupled with a growing intolerance for waste and misuse, is demanding that agencies readdress their philosophies about "business as usual" (NFA, 1996, p. SM 1-6).

Components of the NFA's *Fire Service Financial Management* (FSFM) elective course in the NFA's EFOP are also related to concepts presented by the QCP research including (a) analyzing the costs vs. benefits associated with public agency decision making, (b) determining the political ramifications presented by the OSFM developing and enforcing (or not enforcing) a QCP, and (c) planning and forecasting for future agency action. The *FSFM Student Manual* recognized that

Communities across the country are dealing with funding cuts, revenue shortfalls, and increasing tax burdens. For many fire departments these funding cuts and revenue shortfalls come at a time when the organization's needs are increasing. They are also coming at a time when citizens are looking to public agencies for increased accountability. Citizens expect careful management of all resources without a decrease or decline in services (NFA, 1997, p. SM 4-4).

The *FSFM Student Manual* further stated that

Fire chiefs and their immediate staffs are people who make decisions. They choose among policy and program alternatives that consume scarce resources both immediately and in the future. These decision makers have a vital interest in getting timely, relevant, and reliable information on the costs and consequences of major decisions (NFA, 1997, p. SM 6-3).

In accordance with the instruction presented in the FSFM class, this research attempts to (a) identify restraints and support for implementing a QCP for the DFP, (b) identify legal implications of implementing and enforcing a QCP, and (c) examine alternatives for the agency to make a smooth transition into QCP enforcement while simultaneously realizing a minimal impact on personnel costs and providing necessary constituent services.

LITERATURE REVIEW

The Ramifications of Low-Quality Code Enforcement

The *IFSTA Fire Prevention and Code Enforcement Manual* (IFSTA, 1987) recognized that fire prevention inspections are the single most important non-firefighting activity performed by the fire service. However, in their *Fire Chief* magazine article "Managing Effective Code Enforcement," Wojcik, Vandercar and Michard (1991) identified that fire prevention programs are ineffective if codes are not enforced adequately.

Sittleburg (1995) summarized legal problems that may be encountered by enforcement agencies relative to inefficient or low-quality code enforcement work. He wrote that the responsibility of municipalities when conducting fire inspections and requiring correction of hazards has been a source of concern for some time. Government has typically argued that such activities constitute only a "general duty" being performed for the good of society as a whole. As such, they do not create any "special duty" to anyone, and consequently give no right of recovery to injured persons when that duty is breached. As a result, the author stated that governments would assert immunity from suits brought on inspection claims. However,

Sittleburg cautioned that this view is changing, and the scope of government immunity is therefore shrinking. Sittleburg recognized that it is not a secret that in many cities, correcting code violations is a long, tedious, and often ineffective process. Still, local governments may be encountering increasingly greater exposure to liability as the process plods along. The author noted that the time might be approaching when governing bodies have to choose between streamlining the enforcement process and getting out of the inspection business.

In Scott's 1997 article for *NFPA Fire Journal* entitled "The New Inspector: Everywhere at Once," he quoted Bruce Hisley, the instructor in charge of fire prevention programs at the NFA. Hisley warned that municipalities that cut fire inspection corners will pay the price down the road--either in more fires or in a lawsuit. Codes that aren't enforced may open the city or the fire department to lawsuits. In Texas, for example, insurance companies have made several recent attempts to sue local fire departments, citing failure to properly inspect and warn building owners of fire hazards.

Bender (1997) writing in the NFPA's *Fire Protection Handbook* identified that inspections conducted as part of code enforcement help to ensure reasonable life safety conditions within a structure. Inspections, which are intended to prevent fires from occurring, are effective because the inspector identifies fire hazards that could cause a fire, allow a fire to develop, or allow a fire to spread. Bender further wrote that inspections determine the proper installation, operation, and maintenance of fire protection features, systems, and appliances within a building. The inspection process should ascertain whether each fire protection system is tested regularly, and records are kept for inspection by the fire department and others. Inspections provide an opportunity to educate the owners or occupants of a building about fire safe behavior and the need for adequate fire and life safety conditions in the areas under their control. Bender recognized that "selling" fire prevention is the key to success in obtaining compliance, and how fire prevention is "sold" should be an important consideration in training programs for inspection personnel. When inspection programs are properly designed and put into practice, inspectors may achieve more through public education and persuasion than through exercising their enforcement authority. The persuasive effect of the inspector's presence, coupled with the inspector's ability to spot and directly see that hazards are corrected, enhances the effectiveness of the inspection program.

The text *Total Quality Management in Government* (Cohen & Brand, 1993) recognized that government organizations have large staffs and budgets. Even a small percentage increase in productivity can free large numbers of people and money for new tasks. Furthermore, the text recognized that there are other reasons to adopt quality improvement programs in government: it motivates and empowers employees, it stimulates success, and it is fun.

The latest printing of the IFSTA Manual *Fire Inspection and Code Enforcement* (IFSTA, 1987) discussed several court cases, which give support to the contention that courts are beginning to vacillate on their positions relative to public agency immunity. These cases are outlined below.

Adams v. State, 555 P. 2nd 235 (1976)

A suit against the state was filed following a fire in a motel in which five people died. The State of Alaska had inspected the motel eight months before the fire and had failed to issue a letter to the owner citing the violations of the State Fire Safety Code, despite the fact that the inspector had indicated to his superior that the motel presented an "extreme life hazard." The Supreme Court of Alaska reversed and remanded for trial a lower court's granting of the state's motion for judgment on the pleading. The court ruled that the statute that immunized the state from tort claims arising out of failure to perform discretionary functions did not immunize the state from negligent failure to alleviate known fire hazards.

Coffey v. City of Milwaukee, 74 Wis. 2d 526, 247 N.W. 2d 132 (1976)

A tenant in an office building brought suit against the City of Milwaukee following a fire that damaged his tenant space. Despite arrival of the fire department in time to control and extinguish the fire, a defective standpipe was unable to furnish the necessary water to fight the fire. The building had been inspected, but the inspector had failed to either detect, or order the replacement of, the defective standpipe. The Supreme Court of Wisconsin affirmed a lower court ruling that overruled the city's and inspector's demurrers. It stated that the building inspections do not involve a "quasi-judicial" function within the meaning of governmental tort immunity statute and that the city could not claim it was merely performing a "public duty," because there was no distinction drawn between "public duty" and "special duty" owed to the tenant under the circumstances.

Halvorsen v. Dahl, 89 Wash., 2d 673, 574 P. 2d. 1190 (1978)

The Supreme Court of the State of Washington revised and remanded for trial a superior court dismissal charging liability against the City of Seattle following a hotel fire in which a man was killed. The court ruled that the Seattle housing code did impose special duty to those individuals who reside in buildings covered by the code, and that the city had long-term knowledge of violations of that code in the building and had undertaken to force compliance on several occasions but had not followed through.

Wilson v. Nepstad, 282 N.W., 2d, 664 (1979)

Following an apartment fire in Des Moines, Iowa that involved deaths and injuries, a district court dismissed a municipal court tort claim action. The Supreme Court of Iowa reversed and remanded the case on the basis that certain statutes were intended to impose municipal tort liability for negligence based on a breach of statutory duty, in this case inspection of the property in a negligent manner and issuing an "inspection certificate" which by implication warranted the premises to be safe for the purposes of human habitation.

Defining Quality

To study methods of improving quality it is obviously beneficial to agree on the definition of quality. However, review of the literature reveals a variety of definitions. Brunetti (1993) wrote that the concept of quality has been around for a very long time. He noted that the characters of quality appeared in ancient Chinese writings where quality was considered the very essence of humanity. Salmonson (2000) did a thorough job of compiling the popular definitions applied by the "quality gurus" throughout history. These included (a) Dr. W. Edwards Deming's teachings that quality "is a predictable degree of uniformity and dependability, at low cost and suited to the market"; (b) Dr. Juran's definition that quality is "fitness for use"; (c) Crosby's feeling that quality is "conformance to requirements"; (d) Taguchi's thoughts that quality is "the minimum loss imparted by the product to society from the time the product is shipped"; (e) Feigenbaum's feeling that quality is "in its essence a way of managing the organization"; (f) the British Standard definition that quality is "the totality of features and characteristics of a product, service, or process, which bear on its ability to satisfy a given need--from the customer's viewpoint"; (g) Hoshin's viewpoint that quality is "correcting and preventing loss, not living with loss," and (h) Flood's belief that quality means "meeting customers' requirements, formal and informal, at lowest cost, first time every time."

Asaka and Ozeki (1990) defined quality as the totality of the characteristics or performances that can be used to determine whether or not a service fulfills its intended application. The authors went on to define "Quality Control" as a system of techniques for economically producing services that meet the customer's requirements. In *Winning the Service Game*, Schneider and Bowen (1995) described quality service delivery with the use of terms such as reliable, responsive, competent, and courteous. They also connected the idea with a "seamlessness" between functions and departments.

Gaston (1989) recognized that quality can be further defined and clarified as conformance to a set of valid requirements. He stated that valid requirements are the needs and reasonable expectations of customers, both internal and external. The author suggested that the appropriate results of any service or process could be enhanced if the following simple questions were asked (a) who are we and what are we in business for, (b) who are our internal and external customers, (c) what are we doing, (d) what should we be doing, and (e) do we meet or exceed our customer's reasonable needs and expectations?

In his EFO research paper O'Brien (1994) recognized that the word quality appeared extensively throughout the reviewed literature. He wrote that quality had several different meanings, depending on the perspective of the customer and the provider. Under Quality Assurance (QA) programs for example, a retrospective analysis of measurement of a product, process, or service is taken into account. It is designed for customer satisfaction, but it does not necessarily take input from the customer initially. Total Quality Management (TQM) on the other hand looks closely at customer service. It asks the customer to define quality rather than telling the customer what quality is. TQM focuses heavily on the relationships among suppliers, internal customers, and external customers to produce quality service and products. O'Brien concluded that possibly the best definition of quality was offered by Elmuti and Kathawal (1999) when they wrote that "quality is a never-ending process of continuous improvement" (p. 8).

Rainey (1991) recognized that defining and judging quality is a complex issue. He wrote that those who set out to study effectiveness soon realize that assessing whether an organization does its job well involves numerous complex technical, economic, ethical, and ideological issues. Cartin (1999) wrote that quality relates to perfection and excellence. To customers it is a value used to select services. In organizations of all kinds it refers to error-free and defect-free work, products, and services. Other important quality components are dependability, consistency, safety, and meeting the needs of the customer. The author noted that a previously widely accepted definition of quality had been "conformance to requirements." However, this resulted in a concentration on quality control issues. He suggested a newer definition of quality that includes a judgment of the "fitness for use" of a service. This approach brings the customer into the quality equation.

Bowles and Hammond (1991) recognized that in attempting to demonstrate the meaning and importance of high quality, the American Society of Quality Control (ASQC) produced a thought-provoking booklet a few years back that dramatically illustrated various degrees of quality and the fallacy of thinking that 99 percent performance is acceptable. According to ASQC 99 percent performance meant (a) doctors would write 200,000 wrong prescriptions per year; (b) drinking water would be unsafe 4 days out of every year; and (c) there would be no electricity, water, heat, telephone service or television transmissions for about 15 minutes each day. One theme that is prevalent throughout the definitions, regardless of the applicability to the public or private sector, or whether the quality is related to service or manufacturing, is the need to address the customer.

Who is the Public Agency's Customer?

In *Breaking Through Bureaucracy*, Barzelay (1992) recognized that the most important recent conceptual challenge to the bureaucratic paradigm arising in the world of practice is the notion that government organizations should be "customer-driven" and "service-oriented." Barzelay wrote that thinking in terms of customers and service helps public managers and overseers articulate their concerns about the performance of government operations for which they are accountable. Specifically related to enforcement agencies, Barzelay found that strategic service management is also practiced in situations where the government-citizen transaction is involuntary and when obligations are being imposed. As an example of this kind of situation he referenced the taxation system. The author noted that some revenue agencies are now identifying taxpaying individuals and businesses as their customers; others identify the collective interests of the people who pay taxes and receive government services as the customer, while conceiving of service provision as a way of cost-effectively facilitating voluntary compliance.

Osborne and Gaebler (1992) identified that bureaucratic institutions will work only in some circumstances. The authors wrote that if the environment is stable, the task is relatively simple, and every customer wants the same service, and the quality of performance is not critical, a traditional public bureaucracy can do the job. But most government institutions perform increasingly complex tasks, in competitive, rapidly changing environments, with customers who want quality and choice. The authors went on to recognize that public agencies often ignore customers because most public agencies don't get their funds from their customers as businesses

do. Public agencies get most of their funding from legislatures, city councils, and elected boards. They also concluded that most of the public agency's customers are captive. Short of moving, they have few alternatives to the services their governments provide. So managers in the public sector learn to ignore them. The customers that public managers aim to please are the executive and the legislature--because that's where they get their funding. So while businesses strive to please customers, government agencies strive to please interest groups.

Osborne and Gaebler (1992) went as far as to suggest that few people in government ever use the word customer. Most public organizations don't even know who their customers are. They stated that American governmental agencies are "customer-blind," while businesses are "customer-driven." This, they wrote, may be the ultimate indictment of bureaucratic government.

Donahue (2000) writing in *Fire Chief* recognized that in many cases, governments are blind to their citizens, viewing them simply as relatively uninformed recipients, rather than masters. He advocated refocusing government on the interests and desires of citizens as the consumers of public services. The author noted that this approach "prompts us to rethink how we go about serving our citizens" (p. 8).

Robbins (1994) wrote that as nonprofit entities, fire departments tend to think they have a captive clientele. However, the author pointed out that this is not necessarily so. Just as consumers will take their business where they are well treated, businesses will also locate in areas that are conducive to their success. Code enforcement and other municipal services are part of the environment a company evaluates when making a decision on where to get started or relocate. Witness the many businesses that are now leaving cities and states with excessive regulations and overzealous enforcement. The author noted that the way codes are enforced can greatly enhance the fire prevention effort and the business manager's perception of the fire department. And, in an increasingly competitive environment, municipalities need every advantage to attract and keep businesses.

Robbins (1994) recognized that it is rare that someone who has been treated as a valued client will continue to violate the fire code. It's also rare for someone who has been treated as a valued client to find fault with your fire prevention efforts, or fail to support the next bond election or fund drive. This is a different approach to code enforcement, but it is a necessary one. Robbins recognized that business managers are not adversaries of the fire service.

Coleman (1991) recognized the importance of customer input and opinion in an article for *Fire Chief*. He stated that an important dimension of the quality control concept is to periodically ask the customer's opinions. The author advocated that our customers are the tax-paying citizens who use the services of the fire department. Many fire departments are starting to use random sampling techniques to obtain customer input. Similarly, Shouldis (1990) in his article for *Fire Engineering* recognized similarities between public and private organizations. He noted that in their best selling book *In Search of Excellence: Lessons for America's Best Run Companies*, Thomas Peters and Robert Waterman listed eight basic principles for excellence, one of which is to stay close to the customer.

Grant and Hoover (1994) stressed the importance of fire departments being in touch with the citizens that they serve. The authors noted that one of the most prevalent uses of a needs assessment is to identify the types of services and programs the public sector should provide its citizens. In order to do this, it is important to correctly identify the most urgent needs of the community. The authors cautioned that fire departments exist to provide services to the community on the basis of what it needs, not on the basis of what the fire department or its members want to provide.

Cohen and Brand (1993) suggested that some government employees have difficulty in accepting the fact that their customers scrutinize their work and in fact some government employees really don't see taxpayers as customers. The authors noted that this disturbing fact is causing bureaucrats to analyze service delivery and to reinvent government to help change this paradigm. Brown (1993) recognized that for a fire department to define and then provide quality customer service, there are two prerequisites: (a) perceiving those whom the department serves as customers and (b) developing a deep understanding of the customers' expectations.

Rainey (1991) wrote that "one of the oldest debates about public organizations concerns whether their members serve their own interests instead of those of clients, the general public, and elected representatives" (p. 212). Barry (1991) in his book *Management Excellence Through Quality*, raised the issue of identifying public agency customers when he addressed public school systems. He questioned who exactly are the customers: are they students, parents, community government, or industry? How can you measure the level of satisfaction with one or all of them? In their 1994 work *Customer-Driven Project Management*, Barkley and Saylor recognized that an organization cannot survive and prosper in today's world without customers. Many modern organizations have lost sight of this fundamental principle.

Dr. Juran (1989) wrote that it should be recognized that organizations have two distinct types of customers. "External customers" are affected by the product but are not members of the company that produces the product. External customers include clients who buy the product, government regulatory bodies, and the public (which may be affected by unsafe products or damage to the environment). "Internal customers" are affected by the product and are also members of the company that produces the product. They are often called customers despite the fact that they are not customers in the dictionary sense; that is, they are not clients.

Hatry et al. (1992) in their text *How Effective Are Your Community Services?* prepared for the Urban Institute and the ICMA recognized that ultimately, the predominant rationale for regularly measuring performance is to improve services to the public and to provide greater value for the dollars spent on services. Effectiveness data should be used to (a) identify where service delivery problems exist, (b) identify whether past procedures and actions have improved conditions and thus warrant continuation or expansion, and (c) encourage public employees to find ways to improve program performance. This is the bottom line for effectiveness management.

The 1993 text *Total Quality Management in Government* (Cohen & Brand) defined quality as the degree to which a product or service was valued by a customer and fit for use. Central to this definition are the perceptions, values, and beliefs of customers. The authors

recognized that people in government often have difficulty with the notion that a customer ultimately judges the quality of their work. The text went on to present the question "How can you lose business in a public-sector organization?" It was recognized that most managers do not really think about this issue but tend to think of government as a monopoly, with an inexhaustible supply of captive customers.

Once a public agency recognizes that it indeed does serve customers, even when acting in an enforcement role, it is important for those agencies to recognize factors that relate to customer service. Specifically, the NFA's *Strategic Management of Change Student Manual* (NFA, 1996) contained data collected by the White House Consumer Affairs Panel relative to customer satisfaction. The text stated (a) a satisfied customer tells three people; (b) a dissatisfied customer tells 11 others; (c) in one study, 13 percent of dissatisfied customers complained to over 20 people; (d) 96 percent of all unhappy customers never tell the company or provider; (e) of those customers who do complain, between 54 percent and 70 percent who feel their complaint was resolved will do business again; and (f) this increases to 95 percent if the customer feels that the complaint was resolved quickly.

What Influences the Public and Politicians

Operating as a state agency, the OSFM ultimately answers to the citizens of Illinois. On a practical day-to-day basis politicians elected to the state's General Assembly carry out the public's wishes. The General Assembly influences the work of the OSFM by mandating responsibilities, exercising budgetary control, and establishing methods of legislative oversight. Identifying factors that influence politicians is an obvious advantage to the operating programs of any state agency--especially an agency considering a quality improvement program with statewide implications.

In *Reinventing Government*, Osborne and Gaebler (1992) recognized that in government the ultimate test for managers is not whether they produce a product or a profit--it is whether they please the elected politicians. Because politicians tend to be driven by interest groups, public managers--unlike their private counterparts--must factor interest groups into every equation. They further pointed out that the majority of legislators and public executives have no ideas, about which programs they fund are successful and which are failing. Referring to politicians they wrote

When they cut budgets they have no idea if they are cutting muscle or fat. Lacking objective information on outcomes, they make their decisions largely on political considerations. Large, powerful organizations--whether public agencies or private contractors--make the most noise and have the best connections, so they escape relatively unscathed. Smaller, more entrepreneurial organizations take the hits (Osborne & Gaebler, 1992, p. 147).

Osborne and Gaebler also recognized a disheartening fact about the political support for fire prevention programs:

Prevention is hard to sell in a political environment. Where leaders have embraced it, they usually have been driven by unavoidable financial or political pressures. Prevention is not nearly as attractive to politicians as a visible response to crisis. Prevention is quiet, but politicians who mount all-out attacks on symptoms generate publicity (Osborne & Gaebler, 1992, p. 235).

Harrington, in his text *Total Improvement Management* recognized that President Clinton stressed the importance of quality improvement in government performance and gave the ultimate politician's viewpoint when he stated

Innovative management techniques such as TQM, should be considered as one of the many approaches to make government more effective and efficient. We can no longer afford to pay more and get less for our government. The answer to every problem cannot always be another program or more money (Harrington, 1995, p. 14).

What Gets Measured, Gets Done

Kessler (1996) wrote "If you are not measuring it, you are not managing it" (p. 4). Walton (1991) made an equally strong statement about the need for data writing "In God we trust. All others must use data" (p. 96). He went on to indicate that basing decisions on accurate and timely data is critical to quality improvement.

Peters and Austin (1985) in *A Passion for Excellence: The Leadership Difference* recognized that the surviving organization is the adaptive organization and that the adaptive organization is one that is in touch with the outside world via living data. Similarly, in *Reinventing Government*, Osborne and Gaebler (1992) recognized that because they don't measure results, bureaucratic governments rarely achieve them. They wrote that in large institutions, public and private, things are counted, and whatever is counted, counts. The authors indicated that the simple act of defining measures is extremely enlightening to many organizations. Typically, public agencies are not entirely clear about their goals, or are in fact aiming at the wrong goals. When they have to define the outcomes they want and the appropriate benchmarks to measure those outcomes, this confusion is forced into the open. People begin to ask the right questions, to redefine the problem they are trying to solve, and to diagnose that problem anew.

In *Managing by Measuring*, Czarnecki (1999) recognized that the company that measures customers' opinions is more likely to come out with successful products or services. The author also stated that before there is a measurement program, someone must identify appropriate measures. Even after a measurement program is in place, top-performing companies continue to review measures and identify new ones to meet the needs of their environment as it changes.

Mikel and Schroeder wrote that the British physicist Lord Kelvin said
When you can measure what you are speaking about, and express it in numbers,
you know something about it; but when you cannot measure it, when you cannot

express it in numbers, your knowledge is of a meager and unsatisfactory kind; it may be the beginning of knowledge, but you have scarcely in your thoughts, advanced to the stage of science (Mikel & Schroeder, 2000, p. 68).

Mikel and Schroeder (2000) went on to recognize that trying to improve something when you don't have a means of measurement and performance standards is like setting out on a cross-country trip in a car without a fuel gauge. You can make calculated guesses and assumptions based on experience and observation, but without hard data, conclusions are based on insufficient evidence. The authors stated that companies that measure customer opinions, and then link those measurements to their processes, are more likely to come out with successful products or services that satisfy the customers. Companies that measure the quality and efficiency of their processes will be able to produce higher-quality products at lower costs. Companies that measure employee satisfaction are more likely to have higher employee retention rates.

Mikel and Schroeder (2000) concluded that organizations that can't describe their processes in the form of numbers can't understand their processes. And if they don't understand their processes, they can't control them. Improvements cannot be made without data. Products and services "talk" in the form of data. Without data, products and services are mute and companies are deaf. But data, properly assembled and summarized with the aid of statistics, create a tool for understanding defects.

As important as measuring was indicated to be, there were several identified texts that cautioned about the over-use or misuse of measurement techniques in determining an organization's actions. Fischer for example, in his 1994 article for *Public Management* entitled "An Overview of Performance Management" wrote that whatever number you get depends on how you count it. He quoted Albert Einstein as saying "Not everything that can be measured is important, and not everything that is important can be measured" (p. S-6). Fischer further recognized that just measuring something does not improve it, cautioning that performance measurement is only a planning tool. Peters and Austin (1985) similarly cautioned against the overuse of statistics in determining quality. Specifically they quoted Stanley Marcus, founder and former chairman of Nieman Marcus, who stated

I'm afraid as great as computers are, they cannot tell you about the quality of your product. The profitability yes, but not the quality. The human eye, the human experience, is the one thing that can make quality better--or poorer (Peters & Austin, 1985, p. 98).

Czarnecki (1999) listed common measurement mistakes that are made by organizations. These include allowing (a) short-term measures to predominate over long-term measures, leading to a willingness to sacrifice long-term development for immediate gain; (b) efficiency measures to predominate over effectiveness measures, with the result that productivity takes precedence over the value of outputs, encouraging staff to become "busy fools"; and (c) functional measures to predominate over customer-related measures.

Finally, Barry (1991) cautioned against measuring the wrong things. He wrote that what appears to be missing in many organizations is the correct measurement system. What we are currently measuring is not the true satisfaction level of our customers but our own internal performance. We continuously build additional measurements into our system but fail to include the true measure of our customers' requirements. In fact, the author suggested that many organizations are worshipping control systems--as they are going out of business!

What is the Right Measure of Fire Prevention Program Success?

Recognizing the value and importance of measuring the right information, it is important to attempt to identify just what is the correct measure of effective fire prevention code enforcement work. Coleman and Granito (1988) recognized that evaluation of service delivery is essential to the operation of public fire service agencies. The authors identified the purpose of evaluation as "the regular collection of data and analysis of information about the efficiency and effectiveness of departmental service and other activities" (p. 254). The text went on to identify that the purpose of evaluation is to allow public managers and elected officials to make decisions relative to the improvement of program implementation, allocation of scarce resources, and to choose among programs and levels of various activities.

However, even when the purpose and importance of evaluating service delivery is recognized, there remains a fundamental problem of determining the right measure to use. Hall (1997b) described four principal measures of fire loss: (a) fire incidents, (b) deaths, (c) injuries, and (d) monetary loss. Hall further noted that in some settings, two other measures may be of value: (e) environmental impact, and (f) continuity of operations, with these two measures being increasingly important in commercial settings. Hall wrote that most fire and life safety educators have a principal concern with saving lives, so deaths should be a measure of fire loss concern to them. However, he also made a compelling case for the use of other fire loss criteria in judging program delivery.

Hall (1997b) further identified that injuries are also a measure of fire loss often targeted by fire safety educators. He wrote that injuries are several times more common than deaths, and some injuries are extraordinarily expensive, painful, and tragic. He found that although most people value reducing the risk of death much more highly than reducing the risk of injury, injuries are more common. Therefore, injury statistics can provide significant hard evidence of a fire program's positive effects much sooner than the study of fire deaths.

Hall (1997b) also acknowledged that the public often seems far more upset by one fire that kills five people than by five fires that kill one person each. Therefore, decisions must be made regarding whether service delivery intentions are to increase safety or to increase the "feeling of safety" by reducing public distress. Often, pleasing public opinion forces fire agencies to deliver programs that prevent large fires rather than programs likely to save people in circumstances where deaths actually occur.

Hall (1997b) went on to write that the identification of "trends" in fire loss data is of great importance. As an example, he noted that from a national perspective, total fire deaths have been declining, and the risk of death from fire relative to the size of the population has been

declining even faster. However, trends for fire deaths involving particular fire causes have shown different results. In another article, Hall (1997a) also discussed trends noting that if trends are not considered, then an analysis offers a mere snapshot of the fire problem when a moving picture is needed. Hall (1997a) identified that trends "help define whether a fire problem is getting better or worse and if the character of the fire problem is changing" (p. 11-28). When trend analysis is conducted, Hall (1997a) noted that if changes in the fire experience are occurring, they can be tracked to corresponding changes in, among other things, fire prevention activities, codes and regulations, or other elements of the environment.

Writing in the NFPA's *Fire Protection Handbook*, Hall (1997a) also addressed the importance of "rates" as a measure of relative fire risk. He noted that rates are effective in analysis where the size of the group affected by the problem may change. Hall wrote that "Increased fire safety is best measured by the decline in the fire death rate" (p. 11-27). As an example, Hall noted that rural communities do not account for a majority of the country's fire deaths, but they have by far the highest fire death rates compared with communities of larger size. Person for person, their citizens are in the most danger of fire. Similarly, occupants of manufactured homes suffer substantially higher rates of fire fatalities per million population than do occupants of conventional one- and two-family dwellings. Because there are comparatively few manufactured homes, deaths there do not constitute a large share of the total fire fatality problem, but individuals living in older manufactured homes are at more risk than their counterparts elsewhere.

Hall (1997b) acknowledged that different measures of loss will yield different priorities and multiple measures of loss can pull authorities in different directions. He also recognized that determining the proper measure of fire service program delivery often leaves more questions and issues than answers. However, Hall summarized by stating "although fire deaths should not be the only measure, because they take too long to show statistically significant effects, deaths should be regarded as the primary measure of success" (p. 2-15). He further stated that when extending the scope to include injuries, property damage, or some other objective, all such objectives should be treated as secondary to the risk of fire death. Furthermore, Hall advocated using at least a five-year baseline on the community's or organization's fire experience for analysis. In a much earlier text, Bare (1977) reached a similar conclusion as Hall. In his text, *Fundamentals of Fire Prevention*, Bare wrote that the true task of fire prevention and protection is life safety first, property protection second.

Although different fire loss criteria may serve to measure the appropriateness or effectiveness of different fire prevention agency programs, the measurement of fire deaths does appear to be the most predominantly used indicator. The importance placed upon fire deaths as a relevant measure of a state's success in combating fire problems surfaces repeatedly in related literature. For example, the USFA National Fire Center's publication *Fire in the United States 1986--1995* (FEMA, 1998) contains national as well as state-by-state fire loss statistics. Although offering data relative to several aspects of each state's fire experience, the one parameter that is presented in tabular and graphic form for every state is "fire deaths." Furthermore, the OSFM's *2000 Annual Report* (OSFM, 2001a) implies that the measurement and reduction of annual fire deaths is the foremost indicator of OSFM success by presenting the information in conspicuous tabular format. Therefore, examination of current literature suggests

that the number of fire deaths--including examination of the fire death rate and fire death trends--is the most commonly applied measure of the success of fire agency program delivery.

Robertson (1995) in *Introduction to Fire Prevention* confirmed that fire death totals have been used as a means of measuring the effectiveness of fire prevention activities. He supported the usefulness of fire death statistics in the determination of programs and policies. Similarly, Hatry et al. (1992) in *How Effective Are Your Community Services*, suggested some alternatives for measuring the effectiveness of a fire prevention program's quality or effectiveness. These included (a) rates of fires in inspected versus uninspected (or frequently inspected versus infrequently inspected) occupancies of a given type, and (b) comparing relative fire rates for inspected versus uninspected properties. The authors wrote that because all inspections are intended to improve life safety as well as reduce the likelihood of fires, similar comparison can be made for deaths and injuries, though their numbers will be much fewer than fires and make it harder to find statistically significant results.

Hatry et al. (1992) wrote that agencies should consider the real product of public services and not merely rely on some physical output that happens to be easily measured. They recognized that this kind of efficiency measure is seldom used in local government today, probably because of the shortage of effectiveness data and a lack of familiarity with this type of measure. As meaningful effectiveness data becomes available for government services, measures of this type should come into more general use. The author also recognized that when a local government undertakes to measure efficiency, there is a danger of encouraging excessive concern with current performance at the expense of future performance. If too much emphasis is put on current efficiency, expenditures aimed at improving future performance may be neglected. They noted that the number of activities and sub-activities in local government that can be measured for efficiency seems endless. Some local governments that engaged in very detailed efficiency measurement efforts found they were unable to survive their own tests of cost effectiveness. Moreover, efforts requiring highly detailed time-keeping can cause considerable annoyance to the personnel involved. The authors cautioned that excessive data collection leads to knowing more and more about less and less, and it should be avoided.

The True Mission of the OSFM DFP

Improving the quality of a service has no value if that service is unrelated to the mission or purpose of the organization. Even if the quality of DFP code enforcement can systematically be improved, it must be determined whether the work of the division truly accomplishes the mission of the agency. While concentrating on enforcement inspections that find violations of adopted codes and standards, the question must be asked whether the agency's personnel are truly being utilized to the agency's advantage to protect the citizens of Illinois from fires, explosions and other hazards. Concentration of DFP personnel efforts on recent advancements in public fire safety education, juvenile fire setter intervention, and more comprehensive risk analysis and prevention programs for example, might better serve to truly affect fire safety in Illinois. Mikel and Schroeder (2000) wrote that a company's leadership needs to identify the primary business objectives of the company, identify the primary operational objectives for each

business unit, and baseline the key processes before quality improvement programs can be selected.

Fischer (1994) wrote that to stay ahead and to plan, you may have to look at your program or service in a new way. IBM did this and moved from being the leader in typewriters to a major player in computing. Because it realized that its mission was communications, not typewriters or machines, it was able to change when the technology used to fulfill its mission changed. Similar thinking was advocated by Dobyns (1990) in an article he wrote for *Smithsonian Magazine* entitled "Ed Deming Wants Changes and He Wants Them Fast." The Dobyns article raised an interesting case-in-point relative to an industry of the past. He wrote that buggy whip makers may have thought they were in the buggy-whip business when actually they were in the transportation business. Specifically, they were in the field of vehicle acceleration. Even making the best-quality buggy whips was not enough, consistency of purpose means staying ahead of the customer to meet present needs, as well as planning for the future.

In their work *Transformational Leadership in Government*, Koehler and Pankowski (1997) wrote that if government is going to survive and thrive in the twenty first century, today's government leaders must dramatically change their approach to leadership. Taxpayers have lost confidence in government. The authors noted that opinion polls show that less than 20 percent of the American public believes that government is efficient and effective. Unless government leaders change, traditional government practices will be encouraged and maintained. The authors wrote that the most effective action is to retrain government leaders with new principles of leadership so that government can embark on a new way of conducting business.

Barzelay (1992) recognized that the increasingly common use of such terms as customers, quality, service, value, incentives, innovation, empowerment, and flexibility by people trying to improve government operations indicates that the bureaucratic paradigm is no longer the only major source of ideas and argumentation about public management in the United States. Osborne and Gaebler (1992) wrote that today's environment demands institutions that are extremely flexible and adaptable. It demands institutions that deliver high-quality goods and services, squeezing ever more bang out of every buck. Specifically they wrote that

Today's environment demands institutions that are responsive to their customers, offering choices of non-standardized services that lead by persuasion and incentives rather than commands; that give their employees a sense of meaning and control, even ownership. It demands institutions that empower citizens rather than simply serving them (Osborne & Gaebler, 1992, p. 15).

Coleman and Granito (1988) in the ICMA text *Managing Fire Services*, recognized that fire prevention is less spectacular than suppression. It is also less expensive and is universally accepted as the most effective means of accomplishing the mission of the fire service. However, for their article in *Fire Chief* entitled *Managing Effective Code Enforcement*, Wojcik et al. (1991) interviewed fire protection engineer Richard Solomon who believed that fire prevention should focus on fire safety and prevention rather than simply writing citations for violations.

Fischer (1994) in his article for *Public Management* recognized that there is a profound feeling in the country that government has not been doing its job--not just that tax dollars are wasted, but that government cannot be counted on to help improve the nation's future or support the current aspirations of ordinary Americans. This leads to the obvious question of whether the present government organizations can operate effectively these days. Silk (1990) in his EFO research paper entitled *Total Quality Management and the Fire Service* identified that to the public, the perception of "total quality" and "continuous improvement" in government might be considered a joke in poor taste. It might be interpreted by some to mean that the government does not know how to help nor does it care to do so. The author recognized that the fire service is part of the public perception of government. He wrote

We like to think of ourselves as beyond that perception and more like a well run business. The truth of the matter is that people are making comparisons from within the public sector, as well as private industry. The climate is changing. With taxpayer-revolts and increasing demands for service, the fire service is confronted by the need for greater productivity and better services (Silk, 1990, p. 2).

The Purpose of Fire Prevention Codes and Inspections

According to the NFPA *Inspection Manual*, code enforcement is employed in an effort to guarantee that structures, equipment, processes, and operations are maintained in a manner consistent with law (Shaw, 1989). Shaw further stated that the purpose of conducting fire inspections is to limit the risk of life and property losses from fire. A fire prevention inspector does this by identifying and bringing about the correction of those conditions that contribute to the occurrence and spread of fire. More specifically, the text noted, the inspector's approach depends on the reasons for making the inspection and the responsibilities of the inspector or the inspecting authority.

Coleman and Granito (1988) further identified that fire prevention inspectors "help educate the occupants of buildings so they can avoid routine problems and understand complex solutions" (p. 38). They wrote that the monetary effectiveness of fire prevention programs is difficult to measure, as one large fire can cost more than many small ones. However, they noted that it is not difficult to see that fires increase when fire prevention programs are cut back and they decrease when those programs are expanded.

Coleman and Granito (1988) further pointed out that attempts at reducing fire losses associated with the material aspects of U.S. society are carried out through codes, ordinances, and inspections of properties for hazards. However, these efforts have not produced a complete solution to the fire problem. The authors noted "that the reality is, in most cases, buildings and materials do not start fires--people do" (p. 379). The enforcement of fire prevention regulations has traditionally been accomplished primarily by relying on voluntary compliance. "Selling" fire prevention has been effective and continues to be the preferred method of enforcement. In terms of personnel resources, it is the most cost-effective method of achieving compliance.

In contrasting the purpose of fire codes with other types of regulations, Coleman and Granito wrote

Primarily aimed at maintenance of protection features, such as alarm systems, sprinkler systems, occupancy limits, and means of egress, fire codes have fostered ongoing inspection routines by fire departments. Most other codes and standards are concerned with installation or construction, not maintenance. Thus, once the provisions of a particular code have been met, no additional inspections are required (Coleman & Granito, 1988, p. 390).

Although there appears to be general agreement in the textual descriptions of the purpose of fire prevention and code enforcement programs, there is a caution to be stated. Unless measures of the effectiveness of fire prevention programs are developed and exercised, many responsible for it may be overlooking the true purpose of fire prevention. In their work *Reinventing Government* Osborne and Gaebler addressed the issue by stating

People often wonder why government programs live on for decades after they have become obsolete; why a state keeps inspecting meat long after the federal government begins duplicating its work; why HUD keeps a large urban renewal staff long after cities have quit doing much urban renewal; why California has 400 commissions that spend almost \$2 billion a year. The answer, at least in part, is that no one outside of the bureaucracy can tell if these offices and commissions do anything worthwhile, because no one measures the results of their work (Osborne & Gaebler, 1992, p. 152).

Proving the Benefit of Higher-Quality Fire Prevention Inspections

Schaenman, Hall, Schainblatt, Swart, and Karter (1979) recognized that there is an increased willingness and perceived need to devote more resources to fire prevention programs. Although their work is now 20 years old, it represents one of the few comprehensive examinations of measuring fire protection effectiveness. The authors indicated that no satisfactory method has been available to measure the effectiveness of such programs in preventing fires. There has been no way to know whether increased resources, often sought for these programs, would produce the desired results. They went on to write that the failures of fire prevention (e.g., deaths and injuries) are recorded, but corresponding successes (e.g., fireground saves) are not.

In one of the only other identifiable full-scale studies of the methods that lead to successful fire prevention programs, Hall, Koss and Schainblatt (1979) concluded that the analysis of civilian fire casualties showed that most casualties occur in ones and twos and cannot be prevented once the fire starts. Further, they determined that fire rates appeared to be substantially lower in cities that annually inspected all or nearly all public buildings. Fire rates tended to be higher in cities in which a substantial share of the public buildings went several years between inspections, or were not regularly inspected at all.

In his EFOP applied research paper, Lea (1993) wrote that the purpose of his paper was to identify any currently available methodologies designed to measure the validity of fire codes and the enforcement of those codes through plan reviews and recurrent inspections. He identified that the problem in measuring productivity is due to the lack of a substantive product. He questioned how you can measure the outputs of a fire prevention program, noting that if a fire did not occur or was substantially reduced in size or intensity, it cannot be measured. Lea pointed out that such studies would be difficult to conduct due to the legal constraints placed upon a given jurisdiction. Specifically, the law imposes a duty to provide equal and consistent enforcement of all laws within a given jurisdiction. It is therefore impossible to set up a typical scientific study due to the inability to set up a base line control group by which to measure the results of an inspection program.

Lea (1993) further identified a general absence of information pertaining to the evaluation of the effectiveness of fire prevention programs with the exception of the previously noted *Fire Code Inspections: What Methods Lead to Success?* by Hall et al. (1979). Lea concluded that annual fire inspections consistently performed every year result in a significant reduction in the number and severity of fires experienced by a jurisdiction in terms of monetary loss and in injury to the citizens of the jurisdiction.

In the NFPA's *Fire Protection Handbook*, Granito (1997) described a frustration felt by many fire prevention and code enforcement administrators in attempting to indicate quality improvement in their efforts. Specifically, Granito wrote that fire prevention activities are somewhat difficult to evaluate. In a real sense, if fire prevention activities are effective, fire and fire-related tragedies occur with less frequency. There is a reduction or absence of fire activity, and these results are statistically evident although they do not appear in dramatic news clips and photographs. Some departments do report not only dollar amounts of fire loss, but also the value of structures that were threatened by fire and thus "saved." Without careful and systematic long-term record keeping concerning the incidence of fires, fire losses, and related tragedies, the effect of fire prevention programs cannot be documented. Inability of fire officials to demonstrate the value of committing some additional community resources to the broad range of possible prevention activities may well result in a withdrawal of resources from prevention programs and a subsequent increase in the need for a much larger suppression budget. Rational decisions and sound recommendations concerning evaluation and planning cannot be made unless fire officials learn what changes there can be to total fire cost by reallocating resources applied to the total fire defense system.

Measuring Outputs vs. Outcomes (Efficiency vs. Effectiveness)

The 1992 Osborne and Gaebler work *Reinventing Government* devoted much discussion to the subject of public organization efficiency versus effectiveness. The work recognized that there is a vast difference between measuring efficiency and measuring effectiveness. Efficiency is a measure of how much each unit of output costs. Effectiveness is a measure of the quality of that output: how well did it achieve the desired outcome? When we measure efficiency, we know what it is costing us to achieve a specified output. When we measure effectiveness, we know whether our investment is worthwhile. Efficiency and effectiveness are important. However,

when public organizations begin to measure their performance and the quality of their service delivery, they often measure only their efficiency. The authors identified that although the public certainly wants efficient government, they want effective government even more. The work indicated that "There is nothing so foolish as to do more efficiently something that should no longer be done" (p. 351).

Osborne and Gaebler (1992) further noted that because they do not measure results, bureaucratic governments rarely achieve them. Consequently, with so little information about results, bureaucratic governments reward their employees based on other things--their longevity, the size of budget and staff they manage, and their level of authority. Therefore, "employees assiduously protect their jobs and build their empires, pursuing larger budgets, larger staffs, and more authority" (p. 139). They wrote that this legacy has endured because the ultimate test in government is not performance, but reelection. Osborne and Gaebler concluded that

Typically, public agencies are not entirely clear about their goals, or are in fact aiming at the wrong goals. When they have to define the outcomes they want and the appropriate benchmarks to measure these outcomes, this confusion is forced into the open. People begin to ask the right questions to define the problem they are trying to solve, and to diagnose that problem anew (Osborne & Gaebler, 1992, p. 147).

Similarly, in *Managing Fire Services* Coleman and Granito (1988) wrote that program results may be analyzed as outputs and outcomes. The distinction, they noted, is important in practical management. Outputs are what a department does; outcomes are the consequences of that action (or inaction). The authors recognized that results-orientated management requires that outputs be tangible and quantifiable; for example, in terms of number of inspections completed, number of calls answered, and so on. Outcomes--the consequence of actions--are harder to define, but they need to be taken into account by management. Outcomes tell whether a program accomplished what was intended in the community. For example, completing inspections may or may not result in reduced incidence of fire.

Osborne and Gaebler (1992) recognized the need to do both quantitative measurement and qualitative evaluation of public program delivery. They pointed out that good managers can get enormous insight into performance by looking at relevant numbers, but they can get equally valuable insight by spending time observing the program, agency, or provider; talking with workers; and listening to customers.

The publication *Fire Death Rate Trends: An International Perspective* recognized that quantifying fire safety is a difficult task. Although the number and rate of fire deaths are certainly indicative of relative fire safety, they are also the result of a nation's overall fire safety environment. Five crucial components that contribute to a nation's overall fire safety environment were identified: (a) the quality and distribution of firefighting resources, (b) the amount of active and passive fire protection in the built environment and its contents, (c) the amount of fire prevention activities undertaken, (d) the societal acceptability of fire, and (e) the fire safety behavior of the population (FEMA, 1997).

Watts (1997) recognized that the disparity between outputs and outcomes is evident even in code requirements. He wrote that most building codes maintain only a tenuous relationship between life safety requirements and fire safety objectives. For example, he stated "the number of exits has an intuitively positive correlation with life safety, but no explicit relationship and no functional association for determining cost-benefit" (p. 9-11).

Barzelay (1992) in his work *Breaking Through Bureaucracy: A New Vision for Managing Government*, argued that efficiency should be dropped from the lexicon of public administration, as it has from sophisticated practical theories of manufacturing and service enterprise management. He noted that public officials, like their counterparts in nongovernmental organizations, instead should make use of such interrelated concepts as product or service, quality, and value when deliberating about the nature and worth of government activities. Osborne and Gaebler (1992) wrote that focusing on efficiency more than effectiveness also tends to alienate public employees. When governments stress the cost of each unit of work, they often develop a "green-eyed" mentality that belittles the intelligence and skill of their workers. Most employees want to be effective. Most will gladly do what is necessary to increase their organization's impact. But if their superiors concentrate solely on efficiency--on how quickly they do each unit of work--they will begin to feel as if they are on an assembly line.

Hatry (1987) did recognize that there are some limitations to outcome measurement and what it can reveal about programs. The author concluded that outcome monitoring will not, by itself, indicate why conditions are improving, worsening, or staying the same. Unfortunately, Hatry explained that the process provides information on what outcomes have been, without explicitly identifying causes for these outcomes. From time to time, more in-depth program evaluations will be helpful to assess the reasons behind selected outcomes of concern. Another limitation Hatry recognized was that it is very unlikely that the outcome measures chosen for regular monitoring will cover 100 percent of any program's outcomes. Finally, Hatry concluded, outcomes are only one side of the coin in assessing quality service delivery. Outcome data also need to be linked to cost information to provide a more complete perspective on program cost effectiveness.

Hatry (1987) also wrote that outcome information is not free. The amount of extra time and cost will depend heavily on the outcome measures chosen; the precision desired for the data; the availability of existing data, staff, and other resources that can be used, and the extent to which the local government can supplement its resources by such inexpensive means as volunteers and interns.

Rowland, in his 2000 EFO applied research paper entitled *Benchmarking the Fire Service: Focusing on Results and Improvements* recognized that much of the literature he reviewed for his paper revealed a common problem in measuring quality within the fire service. This was a tendency to report information that was better defined as outputs or workload figures, such as number of inspections. There was a unanimous lack of true outcome indicators, or true measures of actual programs, to indicate whether or not they were getting the intended results.

Hatry et al. (1992) in their work *How Effective Are Your Community Services?*, wrote that in examining efficiency in government, it is often forgotten that efficiency implies a certain level of quality of service. If the quality of service is not at least maintained, an increase in

output-input ratios is not really an efficiency improvement. Thus, to obtain a complete picture of government performance, effectiveness and efficiency measures must be examined. Efficiency may seem to be improving (or worsening), although in reality the service quality may be deteriorating (or improving). The authors advocated that in undertaking and using output-input ratios, public agencies should consider the quality of the output. Improvement in the ratio of work accomplished per unit of input is not an improvement in efficiency if the level of service has deteriorated.

Hatry et al. went on to make an important point relative to an organization concentrating on efficiency without considering quality. Specifically, they wrote that

Governments attempting to assess efficiency and productivity need to consider the quality as well as the quantity of the work performed. Increases in work accomplished per dollar or per employee-hour do not in themselves guarantee real net improvement in performance. Reductions in cost per unit of work accomplished that are made at the expense of quality of the service should not be considered improvements in efficiency or productivity. At the very least, effectiveness data should be presented along with the unit-cost data to give public officials a perspective on the relationship between effectiveness and efficiency (Hatry et al., 1992, p. 200).

Review of Traditional Quality Improvement Programs

As previously noted, the concept of quality and methods to improve quality date back to ancient times. However, Harrold (1999) identified that since WWII, the proliferation of programs and initiatives designed to improve quality have left many American organizations confused. Progressing through the "latest fad," organizations have tried downsizing, outsourcing, activity-based costing, new-product development, reengineering, material requirements planning, and creating "world-class" organizations. In the 1980s a customer satisfaction revolution swept across the U.S. promoting the concept that focusing on customer satisfaction was good for business. Employees were attending quality improvement courses, forming quality circles, and organizing customer satisfaction improvement teams. However, Harrold noted that for some organizations, the investments in these quality improvement programs never produced the desired result.

Resultantly, Harrold (1999) recognized that many companies, and managers, disregard the importance of quality and take refuge in one or more of the following beliefs (a) to err is human; (b) excessive quality costs too much, takes too long; (c) just beating last year's numbers is good enough; (d) "soft errors" (like paperwork) are more excusable; (e) we are still better than our competitors; and (f) firefighting our way out of a quality emergency in the nick of time is a badge of honor, it can even be fun! What follows is a review of the major quality improvement movements that have been developed and applied by private industry in recent decades.

Management by Objectives and Quality Control Programs

Cartin (1999) wrote that Peter Drucker is credited with coining the term "management by objectives" (MBO). In general terms, Cartin explained that MBO is defined as a process whereby the superior and subordinate managers of an organization jointly identify its common goals. They then define each individual's major area of responsibility in terms of results expected, and use these measures as guides for operating the manager's unit and assessing the contribution of each of its members. Cartin went on to explain that the American version of MBO became a controlling fixture in the form of quality assurance (QA) programs that were used to prevent shipping defective material to customers. MBO concentrates on the degree to which an end product or service meets pre-determined objectives and standards.

Today, MBO has come to be viewed as an outdated form of quality control with inherent problems that make its usefulness limited in progressive organizations. Osborne and Gaebler (1992) wrote that MBO systems can create internal conflict within the organization. Each department focuses obsessively on meeting its objectives, while ignoring the impact on other departments or on the ultimate goal--customer satisfaction. Each manager worries about hitting his or her numbers, rather than solving the underlying problems that get in the way of customer satisfaction. Few are willing to take the risk of pursuing major new opportunities that are not covered by their stated objectives.

Similarly, O'Brien (1994) in his EFO research paper recognized that MBO and QA are retrospective approaches that deal primarily with the measurement of an end product. The approach inspects for quality and has a tendency to be more negative than positive. Lower level employees usually are not included in the problem-solving or decision-making process, even though they may be the best to identify solutions. O'Brien found that research reveals that some QA practices can create fear and distrust between managers and employees. This is because services provided by the employee are evaluated for defects. Specifically, O'Brien noted that from a management perspective, MBO and QA have two significant drawbacks: (a) the programs tell where you have been, but will not necessarily identify where you are going; and (b) they have always been perceived by field personnel to be punitive, finger-pointing processes.

Benchmarking

Walker (1994) identified the origins of the word "benchmarking." He stated that the traditional use of the term stems from "a surveyor's mark made on a stationary object of previously determined position and elevation and used as a reference point in tidal observations and surveys" (p. 5). This original concept has evolved to make benchmarking a useful tool in the measurement, comparison, and analysis of organizational performance. Today benchmarking has come to mean a method of comparing an organization's efforts to known standards of performance. The author recognized that the private sector has used benchmarking for a long time. He wrote that there are several reasons for this. First, competition forces the private sector to stay sharp and continuously improve in order to survive. The fire service, on the other hand, is really only beginning to feel the effects of competition from the private sector as well as competition from dwindling tax-based resources. Second, in the private sector, widely recognized performance standards are much more prevalent; we see examples of them almost

every day: airline on-time performance, automobile design and production; even recently, the delivery time for pizzas.

Walker (1994) wrote that the existence of standards is critical to benchmarking, in order to make accurate and valid comparisons of performance between organizations. The fire service must continue to develop industry-wide performance standards for its products, processes, and services before it can fully realize the benefits of benchmarking. The author also introduced the idea of "horizontal benchmarking". He stated that most are familiar with "vertical benchmarking" which compares your organization or services with those of other organizations in the same field of service. Horizontal benchmarking involves comparing your organization and services with those of other unlike industries. He wrote that "as the fire service continues to evolve and develop the type of performance measures which will greatly facilitate the ability to vertically benchmark, it will also be important to keep an eye on the next evolutionary milepost--horizontal benchmarking" (p.10). In the private sector, benchmarking has evolved from a few companies in the 1970s that were vertically benchmarking competitors within their own industry to the 1990s where companies were benchmarking other industries outside their own (horizontal benchmarking) on a global scale.

Coleman (1999) in his article for *Fire Chief* magazine entitled "Benchmarks: Your Tools for Winning Wars, Not Battles" recognized that in the fire service, the concept of benchmarking is closely related to the idea of constant process improvement. In other words, it describes what we do and how well we do it over an extended period. The author stated that benchmarking is one tool that deals with measuring both the quality and quantity of fire services. Unfortunately, it's a technique that doesn't have a permanent home in many fire protection management plans. Coleman went on to note that benchmarking helps your department focus on significant improvements rather than incremental changes. He wrote that "it allows you to identify real targets to improve the credibility of your organization. Benchmarking moves you from the quantification of what you're doing to the qualification of where you're going" (p. 2).

Coleman also identified that Dr. Edwards Deming had an excellent quote about benchmarking. Deming stated "you don't have to do this; survival is not compulsory" (1999, p. 2). Coleman listed reasons why benchmarking is an organizational activity that can benefit fire service organizations. Among these reasons, he listed that benchmarking can (a) help you meet customary requirements; (b) adapt other industry practices for your own use; (c) set more relevant, realistic, and achievable goals for your organization; (d) develop accurate measures of your own productivity; (e) create support and momentum for internal cultural change; (f) establish or refine your strategies; (g) warn you of impending failure; (h) test the effectiveness of your quality improvement program; (i) promote better problem-solving and decision making; and (j) provide an education and creative boost for your own personnel.

Fischer (1994), in his article "An Overview of Performance Measurement" in *Governing* magazine recognized that governments that formerly paid no attention to their own performance now seem obsessed with trying to measure everything in sight. However, he also recognized that although benchmarking is a new buzzword, less than one-quarter or so of those with benchmarking programs--public and private sector users--are actually doing it well enough to yield something useful. The rest are getting limited results or are spinning their wheels, wasting time, and achieving nothing.

Fischer (1994) recognized that benchmarking is not a panacea, but is one means of improving program or service performance when properly used. He wrote that although there are many definitions for benchmarking, they all boil down to finding and implementing "best practices." A best practice is the method used by a company that excels at doing a particular activity. Benchmarkers hope to become more responsive to customers, and thus more competitive, by finding and using what works best. The process also identifies those practices and activities that are below established standards and therefore in need of improvement.

Rowland (2000) in his EFO research paper entitled *Benchmarking the Fire Service: Focusing on Results and Improvements* recognized that benchmarking and performance measurement are not synonymous terms. Benchmarking generally refers to the process of comparing an organization's performance to some standard. The benchmark can be the previous performance of the same organization, or other organizations. The term can also be used in a more specific sense and refer to the process of comparing with the best performers in an industry. Rowland also identified that comparative performance information (benchmarking) allows for the development of indicators to measure the effectiveness (doing the right thing) and efficiency (doing things right). The author cautioned that the main purpose behind benchmarking is to focus on results and improvement, not to create a reporting system.

The 1994 text published by the Bureau of Business Practice entitled *Benchmarking: Action Plans and Legal Issues* stated that benchmarking is the process of identifying the highest standards of excellence for products, services, or processes and then making the improvements necessary to reach those standards. The text described three types of benchmarking (a) internal benchmarking--identifying and assessing the best practices within your own organization and applying the lessons learned; (b) competitive benchmarking--identifying and studying the best practices of your direct competitors and assessing how yours stack up against theirs, with the goals of learning and improvement; and (c) functional benchmarking--studying the processes, products, and services of other organizations not necessarily competitors, and again, identifying best practices with the purposes of learning and improvement.

Czarnecki (1999) in his book *Managing by Measuring: How to Improve Your Organization's Performance Through Effective Benchmarking* recognized that benchmarking creates value through four means (a) focusing the organization on key performance gaps; (b) bringing in ideas from external organizations and identifying opportunities; (c) rallying the organization around the findings to create a consensus to move forward, and selling ideas that may not otherwise pass political hurdles; and (d) implementing ideas into operations to yield better quality products and services, and making better decisions from a larger base of facts. The author noted that benchmarking, as a tool, supports total quality improvement. Many organizations use benchmarking as a tool to generate data leading to process improvement.

ISO 9000

There has been much attention paid lately to certification of companies and organizations in accordance with "ISO 9000" standards. Although many have become familiar with the term "ISO 9000 certified," it requires further explanation, especially to the fire service community, which is familiar with ISO as an acronym for the Insurance Services Office. Relative to the

subject of quality management, ISO more commonly refers to the International Standards Organization. Harrington (1995) identified that the International Standards Organization (ISO), based in Geneva, Switzerland, is an organization comprised of representatives from the standards-setting bodies of over 90 countries around the world. The American National Standards Institute (ANSI) represents the United States at ISO. Representatives from many other organizations get involved as well. The mission of ISO is to facilitate the international exchange of goods and services. Understanding that varying requirements for quality management systems presented a barrier to the efficient exchange of goods and services, ISO initiated a technical committee to develop standards for quality systems. After several years of work, ISO published the first version of the ISO 9000 series standards--Standards for Quality Management Systems, in the mid-1980s. The ISO 9000 standards, approved in 1987 were based largely on the then effective British BS 5750 quality system standards.

Harrington (1995) recognized that the ISO 9000 standards are very generic standards for quality management systems in that they can be applied to any organization in any industry. They are not written to be industry, process, or product specific; the interpretation and implementation of the standards will vary depending on the environment. At this time over 50 countries have adopted ISO 9000 as a national standard. Tens of thousands of organizational operations have been certified to the standards worldwide and thousands of others are currently pursuing certification. Manufacturing sites, software organizations and service organizations have all shown interest, though most of the interest has been in the manufacturing sector to date.

Huyink and Westover (1994) identified that ISO 9000 registration is not simply a quality mark to satisfy customers. It represents cultural change in the prevailing system of management. Prevailing management practices draw from outdated quality systems based largely on inspections. ISO 9000 defines a better system for control of processes. Companies registered to an ISO 9000 standard must have in place a defined and documented quality system that will be evaluated by a disinterested third party. Periodic surveillance audits will continue while the registration is in force. Companies seeking registration will be compelled to get control of their quality systems and improve them.

Huyink and Westover (1994) further described that companies can seek registration to ISO Standards 9001, 9002 or 9003. Registration means that a company has had its quality system (the procedures by which it builds products or provides services) assessed by an independent third party (sometimes a division of a country's standards organization), which has concluded that the quality system meets the criteria set forth in the appropriate standard. The ISO 9000 program is applicable to public agency service delivery, however worldwide very few public agencies have sought the certification.

Quality Circles

Springer (1983) identified the basic concept of quality circles (QCs) is that those closest to the work or problem can, if provided proper resources, improve the work and solve the problem. QCs require a team approach rather than individual efforts, with QC membership often cutting through the usual hierarchical organizational structure. A QC is a small group of people

(usually not more than 10) who meet on a regular basis (usually every week or 10 days) to analyze problems and recommend the best options for solutions. The group's responsibility is to build upon their own experience, skill, and creativity to help solve problems that affect everyone (Springer, 1983). Springer further recognized that American organizations using QCs have also discovered that QCs can go beyond technical problems to improve effectiveness. QCs are an extension of the participatory style of management, improving both the quantity and quality of everyone's work. It has been demonstrated that QC can improve a fire department "product" or service to the community through the development of more competent and committed fire department staff. QCs are yet another tool which the effective manager uses to delegate responsibility and authority. The author recognized that QCs are a technique to delegate outward and downward the power to decide and act to those with the needed skill, information, and experience.

Springer (1983) writing in a *Fire Chief* magazine article entitled "Is Your Fire Department Ready For Quality Circles" stated that QCs are not new; they are a manifestation of an old phenomenon: the growing willingness and commitment of an organization to involve all levels of workers in decision making. Specifically, the author noted that QCs reflect a 100-year old trend toward democratizing or humanizing the work setting, and encouraging workers to participate in decisions that affect them. Springer identified that in the early 1900s, Mary Parker Follet, a famous lecturer in industrial relations, urged organizations to attempt collaboration between labor and management rather than competition. She predicted that unions and managers would need to join forces against the larger "enemies" common to both, such as economic and social pressures. Silk (1990) identified that QCs are an extension of the MBO approach that was first started in Japan in 1962. Dr. W. E. Deming and Dr. J. Juran are credited with the introduction of this approach as an education tool. Many fire departments, in the opinion of the author, are currently applying the principles and techniques of QCs.

Williams (1990) in her article for *American Fire Journal* entitled "Can Quality Circles Work in Public Agencies" wrote that quality circles have proven to be successful both for agencies producing products and those providing services. Government agencies are not concerned with profit of course, but are responsible for cutting the operating costs for taxpayers. The author recognized that QCs in government agencies provide the same benefits as realized in the private sector. QCs identify, analyze, and implement solutions to problems. They also help to improve communications, cooperation, productivity, and services of an organization. Additionally, QCs can be beneficial for improving employee attitudes, strengthening training, and job development. Noting that every organization has room for improvement, Williams identified that California State Fire Marshal (CSFM) James McMullen instituted a QC program in the CSFM's office in July of 1987.

In his 1990 EFO research paper *Quality Circles: An Alternative Management Style*, Hugg found that QCs have been positively identified as a prime mover in the reversal of negative trends within an organization. He identified Skelly (1985) as noting that representatives of management tended to identify increased productivity as the chief reason for using QCs, yet they recognized employee decision-making and improved work relations as additional benefits. Hugg also identified that it is the intent of the QC process to serve the entire organization through improved morale, increased productivity, and improved service to the community. This has been demonstrated repeatedly where QCs have been used in the fire service.

Total Quality Management

Salmonson (2000) wrote that TQM is an improvement philosophy that places an emphasis on practices, policies, and philosophies to support an overall objective and enhance quality whether it is a product or a service. Summarizing the history of TQM, Salmonson recognized that Dr. W. Edwards Deming, an industrial engineer investigating problems of quality control originally developed TQM. While working at the Hawthorne plant of AT&T's subsidiary, Western Electric, Deming observed the production of telephone switching equipment and hardware. After being exposed to the Hawthorne study's side effects at the plant Deming was sent to Japan in the late 1940s by the Bureau of Census to help the post war Japanese Government. Salmonson wrote that in Japan, Deming met with the Japan Union of Scientists and Engineers about their concerns over poor quality. Deming gave several lectures to technicians, researchers, engineers, and plant managers. Finally Deming was able to set up a meeting with top executives in the Japanese industry and unlike American Managers the Japanese Managers listened and applied Deming's ideas and techniques to entire organizations.

Coleman (1991), writing in *Fire Chief* stated that if Deming were a fire chief, he might make two suggestions that could cause a mild panic. He might suggest that we eliminate all individual performance evaluations and measure only program quality. The second suggestion he might make would be to involve firefighters in setting those standards. The author recognized both of these thoughts concern people who look at fire management from a traditional perspective. Brunetti (1993) in his book *Achieving Total Quality* wrote that putting customers first or achieving customer satisfaction is at the heart of TQM. A second principle of TQM is "management by fact." The author stated that facts are far better than opinions. Senior and middle management, supervisors, and employees should all be taught statistical techniques and the importance of facts in problem solving. Brunetti recognized that another principle of TQM is prevention. He noted that problem solving is only the first step in making improvement. Not until methods are instituted to prevent the reoccurrence of problems can long-lasting results be achieved. Companies that do not understand this generally end up solving the same problem over and over.

In his 1992 EFO research paper, Burdick recognized that TQM is about change. Changing the system with improvement not being the outcome, but rather a continuous process. The author recognized that one component of TQM is that the greater the involvement that an employee has in determining organizational goals, the more committed he or she will be to improving the processes of achieving those goals. Another is that the commitment of top management is a requirement. Burdick found that reasons for government agencies to use TQM are the same as those for private industry--better service to citizens, tighter budgets, and getting and keeping the best employees. Osborne and Gaebler (1992) identified that in effect, TQM stands the traditional organizational chart on its head: it says that the customers are the most important people for the organization; those who serve customers directly are next; and the management is there to serve those who serve the customers.

Hagan (1994) wrote that in its simplest form, TQM means total integration of the continuous improvement process into all work. The author recognized that the underlying theme of most discussions of TQM is two-fold: (a) the need for sufficient cultural changes in industry

to support the concept of continuous quality improvement; and (b) the need to carry this concept beyond traditional quality assurance applications into all work processes, ultimately including management. Hagan went on to recognize that the difference between TQM and traditional quality improvement programs is that TQM encompasses every aspect of quality management that has been thought of to date. Hagan wrote that this is the claim you find firmly entrenched, or at least implied, in every TQM text or program. TQM is universal. It is the final answer on the question of quality.

Barry (1991) recognized that TQM advocates the development of true customer-orientation, teamwork, and inter-unit cooperation; structured problem-solving; a reliance on quality assurance; standards and measurements; a system of rewards and recognition for excellence; and senior management's long-term commitment to the ongoing process of improving quality. The author further stated that the principle elements of TQM are straightforward and embrace a common sense approach to management. However, each of the individual elements must be integrated into a structured whole to succeed. TQM is a strategic approach with elements that require strategic planning and excellence deployment. Barry's overview of TQM principles included (a) a focus on the customer, (b) a long-term commitment, (c) top management support and direction, (d) employee involvement, (e) effective and renewed communications, (f) reliance on standards and measures, (g) commitment to training, (h) rewards and recognition, and (i) quality assurance.

Barkley and Saylor (1994) recognized that many quality improvement efforts and programs are actually forms of TQM. He stated that in the 1990s, TQM was adapted in many other government agencies, communities, and private industries in the United States under many names, such as total quality leadership (TQL), total quality improvement (TQI), continuous quality improvement (CQI), total customer satisfaction, and so on. The authors noted that although there are many applied definitions of TQM, the basic essence of TQM involves the elements of continuous improvement, a personal service orientation, quantitative methods, and a focus on customer satisfaction. TQM is a management philosophy and set of guiding principles that stress continuous improvement through people involvement and measurements focusing on total customer satisfaction.

Roberts (1993) made a very important distinction. He wrote that TQM should not be confused with the traditional concept of quality control. The goal of TQM is not inspecting products or services in order to eliminate unsatisfactory ones. Instead, quality is built into the production process so that you do not have rejects. Waste that must be eliminated is caused by production mistakes. If you can reduce production mistakes, you thereby eliminate waste and reduce costs.

However, Ealey (1994) offered some cautions on the use of TQM. He wrote that TQM has swept the United States in a tidal wave since the early 1980s; the number of consultants and TQM experts is growing at an astounding rate. Unfortunately, many of the companies that have been attempting to implement TQM programs have over the past 10 years found their programs stalled. In fact, Ealey found in an informal survey of about 30 major US companies that 65 percent of the companies surveyed had stalled quality programs. He found the reason for this was many managers believed that implementing TQM simply meant hiring the right outside

consultant or the right internal quality executive and letting them go. The author noted that these kinds of cookbook approaches to TQM usually fail.

Juran and His Theories

In his 1992 EFO research paper, Burdick reviewed the work of a pioneer in the field of quality--Dr. J. M. Juran. Burdick found that during his early years Juran was a staff member of the scientific team at the Hawthorne Works of the Western Electric Company, which was credited with pioneering the application of TQM. Like Dr. Edwards Deming, Juran was also solicited by the Japanese to assist in post war reconstruction, and through his efforts expanded the concept of inspection quality control to overall organizational quality and quality planning (QP).

In a biography of Dr. Juran, Bendell (2000) wrote that Juran considered QP as part of the quality trilogy of quality planning, quality control, and quality improvement. The key elements in implementing organization-wide strategic QP are seen as (a) identifying customers and their needs; (b) establishing optimal quality goals; (c) creating measurements of quality; and (d) planning processes capable of meeting quality goals under operating conditions. Bendell also noted that Juran's "Quality Planning Road Map" consists of the following steps (a) identify who the customers are, (b) determine the needs of the customers, (c) translate those needs into organization language, (d) develop a service that can respond to those needs, (e) optimize the service features so as to meet organization needs as well as the customer needs, (f) prove that the process can produce the service under operating conditions, and (g) transfer the process to operations. Juran's formula for results included (a) establishing specific goals to be reached, (b) establishing plans for reaching the goals, (c) assigning clear responsibility for meeting the goals, and (d) basing rewards on results achieved.

Statistical Quality Control and the Six Sigma Process

Asaki and Ozeki (1990) recognized that Statistical Quality Control (SQC) is a branch of quality control based on statistical methods introduced in Japan after WWII by U.S. quality experts Dr. W.E. Deming and Dr. J. M. Juran. However, Ealey (1994) identified that uniform quality is an American idea, although we don't acknowledge it as one anymore. Ealey found that Walter A. Shewhart designed a method for statistically tracking normal and abnormal variation in manufacturing processes back in the 1920s. Shewhart developed his methodology, which became known as SQC, while working at AT&T Bell Laboratories.

Six Sigma is a specific type of SQC program. Six Sigma is a movement that inherits directly from TQM. It uses much the same toolset and the same concepts. The fundamental objective of Six Sigma methodology is the implementation of a measurement-based strategy that focuses on process improvement and variation reduction through the application of Six Sigma improvement projects (Pande, Neuman, & Cavanagh, 2000). The authors reviewed Six Sigma history by noting that the process was developed by Motorola in the 1980s as a way of providing a clear focus on improvement and helping to accelerate the rate of change in a hard-pressed

competitive environment. The concept, tools, and system of Six Sigma have evolved and expanded through the years--most recently through the examples set by private industry. This has helped to continually rekindle the interest and redouble efforts towards process and quality improvement. The author noted that even though Six Sigma is based on many of the ideas and tools of the quality movements of the 1980s and 1990s, a savvy company implementing Six Sigma can avoid the pitfalls that have given TQM a bad name in many organizations.

Pyzdek (2001) wrote that companies using Six Sigma typically spend less than 5 percent of their revenues fixing problems. The author explained that Six Sigma is a rigorous, focused, and highly effective implementation of proven quality principles and techniques. Incorporating elements from the work of many quality pioneers, Six Sigma aims for virtually error-free business performance. Sigma, (σ), is a letter in the Greek alphabet used by statisticians to measure the variability in any process. The sigma level of their business processes measures a company's performance. Traditionally companies accepted three or four sigma performance levels as the norm, despite the fact that these processes created between 6,200 and 67,000 problems per million opportunities. The Six Sigma standard of only 3.4 problems per million opportunities is a response to the increasing expectations of customers and the increased complexity of modern products and processes. Pyzdek further noted that Six Sigma is not a "high-tech razzle-dazzle" approach to quality improvement. He noted that Six Sigma relies on tried and true methods that have been around for decades. In fact, Six Sigma discards a great deal of the complexity that characterized TQM.

In *The Six Sigma Way*, Pande et al. (2000) identified several benefits that are attracting organizations to Six Sigma methods of quality control (a) it generates sustained success, (b) it sets a performance goal for everyone, (c) it enhances value to customers, (d) it accelerates the rate of improvement, and (e) it executes strategic change. Pande et al., also noted that there are six themes to the Six Sigma process (a) genuine focus on the customer; (b) data- and fact-driven management; (c) process-focused management and improvement; (d) proactive management; (e) boundaryless collaboration; and (f) a strive for perfection, with an intolerance for failure.

Pande et al. (2000) wrote that although Six Sigma is a measuring process with a goal of near-perfection, represented by 3.4 defects per million opportunities, it is more importantly an approach to changing the culture of an organization. The authors noted that most accurately, Six Sigma is defined as a broad and comprehensive system for building and sustaining business performance, success, and leadership. The authors recognized that the Six Sigma process may be one of the viable holdovers from the TQM and Continuous Process Improvement hype witnessed in the 1990s.

Mikel and Schroeder (2000) wrote that Six Sigma is a long-term forward-thinking initiative designed to fundamentally change the way corporations do business. The authors explained that the lower the sigma level, the greater the number of defects per opportunity. Six Sigma has become recognized as the standard for product and service excellence. Mikel and Schroeder also recognized that although Six Sigma was originally designed for manufacturing, it can be applied to transactional services. In calculating the number of defect opportunities in customer service, the word "transaction" is substituted for the traditional manufacturing word "parts."

Transformational Leadership as a Quality Improvement Tool

Koehler and Pankowski (1997) wrote that government leaders can no longer perceive their role as being only administrators, but must see themselves as leaders of change. Their job is to "transform government organizations from concentrating only on outputs (productivity) to emphasizing quality organizations that focus on meeting or exceeding customer expectations" (p. 16). The authors noted that this is best accomplished through the application of Transformational Leadership (TL), a concept first advocated in the text *Leadership* (Burns, 1978). Koehler and Pankowski explained TL as a process of inspiring change and empowering followers to achieve greater heights, to improve them and to improve organization processes. It is an enabling process causing followers to accept responsibility and accountability for themselves and the processes to which they are assigned. Koehler and Pankowski further recognized that transformational leaders view the organization as a system that is composed of interrelationships and interactions among employees to achieve specified organizational outcomes. Transformational leaders perceive their role as improving processes so they can deliver to their customers. They organize an organization not around functions, but around processes with the focus of delivering value to customers. Their goal is to develop and implement efficient and effective management systems. To be efficient means to provide outputs that yield desired outcomes for government customers.

Contrasting traditional administrators with transformational leaders, Koehler and Pankowski (1997) noted that traditional administrators focused primarily on assigned functions and division of labor. They primarily measured outputs and individual productivity. Transformational leaders, on the other hand, measure inputs, process activities, outputs, and outcomes. They focus daily on quality indicators and data collected at specific points within the process and maintain control. The authors further wrote that transformational leaders recognize improvement first, and those who contribute toward making continual improvements in their process are then recognized. Traditional administrators often resist change because they believe their job is to control their subordinates. Transformational leaders, on the other hand, understand that continual improvement is necessary just to maintain gains.

Problems with Traditional Quality Control Programs

Although there are literally hundreds of identifiable texts addressing the benefits of QCPs, there is also a substantial collection of literature that finds fault with traditional approaches to achieving quality services. The ICMA Practical Management Series text *Productivity Improvement Techniques* (Matzer, 1986) noted that productivity improvement is not without its pitfalls. The text notes that some of the obstacles to productivity improvement include lack of management support, measurement problems, union and employee resistance, absence of analytical talent, politics, failure to provide incentives, and legal and administrative constraints.

Chaudron (2001) cautioned against the overuse of statistical-based quality improvement systems. He wrote that when organizations use statistics to make decisions, they often knee-jerk reactions to small, random changes in outcome. Statistics don't allow decision makers to tell the

difference between chance occurrences and factors that significantly affect product or service quality. Hugg (1990), in his EFO applied research paper entitled *Quality Circles: An Alternative Management Style*, noted that the implementation of the quality control process is not without expense. In order to implement a program, the department must be prepared to initially expend considerable funds in the start-up phase of their programs. Hugg wrote that expenses which one might expect result from (a) hiring a consultant who has extensive experience in quality circle implementation; (b) training for QC members in problem-solving, group decision making, planning and implementation, and small group communications; and (c) sufficient overtime funds to allow QC groups to meet on a regular basis.

In an article entitled *Benchmarking: A Survey for the Fire Service*, Walker (1994) wrote that as the fire service contemplates benchmarking, it must do so understanding that the process has an exposing effect; not all the news is going to be good along the way and not everybody is going to want to hear it. Fischer (1994), writing in *Public Management* cautioned that no single benchmark or range of values possibly can account for the total performance of any program or service. He noted that certainly, some indicators are more important than others. But putting together a series of valid benchmarks is necessary to gain a good idea of what is needed to improve service effectiveness. He noted that one of the goals of benchmarking, naturally, is to permit comparisons among performance measurements. However, although two localities may have similar populations, so many other variables exist that you must question the extent to which direct comparisons really mean anything. Rowland (2000) in his EFO research paper addressing benchmarking in the fire service echoed Fischer's findings when he recognized that the problem with trying to apply a national model to local service providers is that nearly everyone providing services does so within the constraints of local circumstances.

Fischer (1994) further emphasized that although a benchmark is a standard, it is not a measure of quality. Nor is it the lowest common denominator among those delivering a service. He suggested methods to avoid problems with quality improvement efforts by not making a commitment to benchmarking, TQM, or anything similar. Rather, he advocated making a commitment to improving. Fischer concluded that "Otherwise, most likely you will become a statistic, one of the 75 percent of organizations simply going through the motions of benchmarking" (p. S-7).

Drew (1994) recognized a major barrier to success of total quality initiatives was managerial resistance to change--especially middle management, who feel threatened by increased workload yet decreased authority. Drew went on to state that although total quality initiative successes have been widely publicized, this is not the case for failures. As is human nature, companies laud their success stories but tend to sweep their failures under the carpet. With the statistics in the 50 percent to 70 percent range for failure, research into these failures and their causes is critical.

Rowland (2000) in his EFO research paper exposed another often-overlooked problem with comparative analysis in the public sector. He wrote that with the advent of reinventing government, many public sector agencies are focused on increasing their accountability to the public they service. Although there is a legitimate role for comparative analysis in improving public services, the use of performance measures can be a double-edged sword. Favorable

results identify high performers--jurisdictions that are renowned for cost efficiency, high quality services, or innovative practices--resulting in popular acclaim for top managers, officials, and workers. On the other hand, poor results identify poor performers, and can add fuel to the movement for contracting out or even eliminating certain services in those jurisdictions. Therefore, Rowland recognized that, if done incorrectly, an emphasis on data collection may erroneously shift the focus of benchmarking to an exercise that produces data, but little else. This dovetails with the findings of Bruder and Gray (1994) in their article for *Public Management* entitled "Public Sector Benchmarking: A Practical Approach" in which they found that only when benchmarking is planned effectively, when it focuses on the right targets, and when its recommendations are implemented and monitored correctly, are the results significant and sustainable.

Deming, the father of modern quality theory, developed a list of "Seven Deadly Sins" relative to TQM. Walton (1991) recognized that five of these sins are directly applicable to fire department work. These are (a) lack of constancy of purposes; (b) emphasis on short-term profits; (c) evaluation by performance, merit training or annual review of performance; (d) mobility of management; and (e) running a company on visible figures alone.

Nelson (1999) in his EFO research paper entitled *Award Winning TQM Implementation: A Worthwhile Goal for the Fire Service* was able to identify several literature sources, which addressed problems with TQM. Nelson wrote that in spite of many positive remarks found in the literature about the wonders TQM can do for an organization, warnings have been issued, problems have been outlined, and recurring themes of failures were also discovered. Specifically, he found that Korukonda, Watson, and Rajkumar (1999) wrote that "TQM suffers from a built-in desirability bias in favor of teams and empowerment. Such a bias is introduced more by taken-for-granted assumptions about the role of teams and team culture than by any hard empirical evidence or theoretical arguments" (p. 1). Another example Nelson identified was a caution by Dr. Vinod Singhal that "TQM is not a quick fix for corporate problems. TQM is difficult to implement as it requires major organizational changes" (Saccomano, 1998 p. 1).

Hagan (1994) writing in *Management by Quality: Strategies to Improve Quality and the Bottom Line* recognized that although TQM is a good idea, there are weaknesses to be found in any single TQM description or program. The reason is that management excellence, TQM's ultimate underlying objective, is not a commodity that can be bought and sold. Rather, it is a deliberately thought-out, slowly evolving, unique achievement that, at best, is either motivated or strongly influenced and guided by individual concepts of TQM.

Relating Private Business QCPs to the Public Sector

Examination of the variety of quality control initiatives used by private businesses reveals that many were developed for the manufacturing processes of a business rather than the service delivery side of the organization. Therefore, one must question the applicability of traditional quality control methods to service delivery functions and the work of public agencies in general.

Many authors did make favorable comments about the relationship. Walker (1994) in his magazine article "Benchmarking: A Survey for the Fire Service" recognized that while there are some processes unique to the fire service, there are others which are similar across most other public sector organizations and even overlap into the private sector. The author advocated that there is much to gain from industries which are leaders in TQM, marketing, public relations, and personnel management.

In his 1994 EFO research paper entitled *Making Objective Decisions Using Quality Improvement Tools*, Smith identified that Edwards Deming advocated the use of quality management in both service and manufacturing organizations. He found that Deming took exception to those who felt TQM methods are only for manufacturing organizations. The author found that Deming (1982), in his text *Out of Crisis*, wrote about the use of TQM methods in service organizations, by stating "The principles and methods of improvement are the same for service as for manufacturing" (p. 183). Smith also found that Oakland (1993) in his text *Total Quality Management* supported Deming's opinion by stating "Data are data and whether the numbers represent defects or invoice errors, weights or delivery times, or the information relates to machine settings, the techniques can always be used" (p. 248).

Hagan (1994) recognized that service businesses are not as neatly structured as manufacturing businesses. Their products are not as easily defined and specified, but their systems for developing and delivering them to the customers have the same inherent possibility for human weakness, error, and failure as any other operating system. Opportunities for improvement are, therefore, based on similar premises. Hagan also identified that service businesses, in addition to performing to a technical standard, must make personal behavior and staff image important quality characteristics for company operations. The manner in which a service is performed clearly relates to the behavior of the individuals providing the service. Implicit in this behavior and irreplaceable by technology, are human elements like warmth, assurance, response, dexterity, and reasoning. The author concluded that end-customer satisfaction for the service industry is a different challenge than it is for manufacturing. Service industries must learn to evaluate the perceived quality of their output, and service business managers must learn to deal with intangibles such as the emotional content of customer complaints or the degree of empathy shown by an employee.

Several authors, however, commented negatively when addressing the transferability of quality improvement programs being transferable from the private to the public sector. Koehler and Pankowski (1997) recognized that government organizations are not influenced by the bottom line, but rather by the results of legislation and customer service. Government leaders not only influence activities of others, but also must direct a course of action handed to them by legislation. The authors noted that this does not suggest that the only option available to government leaders is to administer legislative programs. On the contrary, it suggests that leaders work within the boundaries of legislation applicable to their programs. The authors further wrote that business leaders are often disappointed because government leaders are so close-minded to new ideas. The authors identified that government leaders and business leaders often do not speak the same language. Similarly, people from business and industry are unfamiliar with government processes and the principles of government management. On the other hand, government leaders often do not understand how major corporations work and

manage their business. However, the authors concluded that what is not so apparent is that leadership skills and expertise are not so easily transferable as most people believe. They noted that "We have observed top business leaders take a job in government management and fail" (p. 11).

Rector and Sanera (1987) in their text about federal government programs entitled *Steering the Elephant: How Washington Works*, wrote that it is often argued that management lessons from successful private companies can be applied to the public sector. However, the text noted several differences between the public and private sector including (a) in the private sector the market guides, in the public sector the political executive guides in competition with other forces; (b) in the private sector, organizations are unified by a single goal, in the public sector, organizations contain a diversity of conflicting goals; (c) in the private sector, management goals are given, in the public sector, the essence of management is the selection of goals; and (d) the private sector and public sectors operate on different information systems. The authors added that unless these basic differences are understood, any attempt to translate insights from one sector to the other will produce "gibberish."

Nigro and Nigro (1989) wrote that civil service and other controls that can reduce efficiency in government do not always hamper private entities. Nor are they subject to the patronage and other partisan political practices of many governments that put and keep on the payrolls poorly qualified persons. Also, governments often lack expertise, specialized equipment, and technology possessed by certain private companies.

The text *Reinventing Government* (Osborne & Gaebler, 1992) recognized that many people believe government should simply be "run like a business." However, they noted that government and business are fundamentally different institutions. Business leaders are driven by the profit motive; government leaders are driven by the desire to get re-elected. Businesses get most of their money from their customers; governments get most of their money from taxpayers. Businesses are usually driven by competition; governments usually use monopolies. Furthermore, governments also extract their income primarily through taxation, whereas businesses earn their income when customers buy products or services of their own free will. The authors recognized that this is one reason why the public focuses so intensely on the cost of government services, exercising a constant impulse to control--to dictate how much the bureaucrats spend on every item, so they cannot possibly waste, misuse, or steal the taxpayers' money.

Osborne and Gaebler (1992) identified that all these factors combine to produce an environment in which public employees view risks and rewards very differently than do private employees. There are many differences. Government is democratic and open; hence it moves more slowly than business, whose managers can make quick decisions behind closed doors. Government's fundamental mission is to "do good," not to make money; hence cost-benefit calculations in business turn into moral absolutes in the public sector. Government must often serve everyone equally, regardless of his or her ability to pay or his or her demand for service; hence it cannot achieve the same market efficiencies as business. The authors concluded that these differences add up to one conclusion: government cannot be run like a business. Osborne and Gaebler did acknowledge that there are certainly many similarities. The authors noted that

public sector managers can learn from business management theorists such as Peter Drucker, W. Edwards Deming, Tom Peters and Robert Waterman. However, they cautioned that in government, business theory is not enough.

Specifically addressing Edwards Deming's TQM theories, Osborne and Gaebler (1992) wrote that because Deming developed his ideas for private businesses, his approach ignores many points necessary for successful public sector management. For example, the authors noted, most businesses can take competition for granted, so TQM ignores the problem of monopoly-- which is at the heart of government's troubles. Furthermore, most businesses are already driven by their missions (to make profits) so Deming does not help public leaders create mission-driven organizations. And few businesses have to be told to earn money rather than simply spending it.

Schneider and Bowen (1995) were even more skeptical about applying private-sector manufacturing theories to public sector service organizations. They wrote "using industrial models to manage service-based corporations makes as little sense as using farm models to run factories" (p. 1). The authors noted that service organizations can outperform the competition if they master what they refer to as the "service game." They emphasize the service game because they believe it to be a very different game from manufacturing.

Quality Programs and Measurement in Public Agencies

Cartin (1999) identified that the essence of the message from quality experts was that higher-quality products and services make an organization more competitive by lowering costs, raising productivity, and satisfying the customer. This of course begs the question--how does this relate to the public service manager?

Harrington (1995) wrote that one thing is for sure: there is a great deal of opportunity in our government to improve, to eliminate the bureaucracy, to cut waste, to streamline procedures, to make effective use of resources, and to provide better service. In all probability, a concentrated improvement effort could reduce administrative costs as much as 30 percent and improve quality of service by over 100 percent. This is true for most city, state, and national governments. Percy and Scott (1985) wrote that officials, researchers, administrators, and citizen's groups have closely scrutinized the delivery of public services in recent years. One stimulus to these efforts has been an erosion of citizen satisfaction with public services. This dissatisfaction is manifested in growing complaints and pressures for improvement. A second stimulus has been the tremendous growth of services as a proportion of total public employment and governmental budgets. Percy and Scott noted that the study of service delivery has been promoted by budgetary concerns; facing stagnant or shrinking revenues, many governments have sought ways to maintain current operational levels despite lower expenditures. All these factors have stimulated research regarding the programs and arrangements used to deliver services as well as the impact of delivery systems on organizational performance and citizen well being.

Gaston (1989) wrote that the public sector provides services and depends on the public purse to pay the costs of those services. Steadily over recent years, the public purse strings have tightened with customers (the taxpaying citizens) demanding the same or more services for less

taxes during times of spiraling cost increases. The author recognized that fire service organizations have been, and will continue to be, in an excellent position for implementing quality improvement processes. Being team-oriented by nature, the fire service organization lends itself to participatory management. Likewise, it is very capable of releasing significant human energy, a factor on which quality improvement processes are predicated. Gaston noted another important statistic: service companies do not document their non-conformances as formally as production companies. As a result of this, service companies spend 35 percent or more of their operating costs doing things wrong and doing them over. Also, just as occurs in service companies, if fire service organizations fail to clearly define quality performance or standards, then each respective manager or employee will develop their own.

Barzelay (1992) wrote about differences in public enforcement agencies and production agencies. He stated that agencies focused on enforcement were typically blind to opportunities to correct problems at their source. For instance, agencies were often unable to comply with norms because their employees did not know how to apply them to specific situations. The author identified that many such compliance problems could have been solved by providing education and specific advice about how to improve administrative or production processes; however, compliance organizations stressing enforcement tended to underinvest in problem solving. Furthermore, an emphasis on enforcement unnecessarily set up adversarial relationships between control activities and compliers. This kind of relationship discourages efforts to comply voluntarily with norms. Pinchot and Pinchot (1993) identified that the world no longer needs the machine-like organizations bureaucracy produces. The authors wrote that "the challenges of our times call for lively, intelligent organizations. Bureaucracy was efficient only for certain kinds of repetitive tasks that characterized the early Industrial Revolution" (p. 29).

Rainey (1991) wrote that virtually all organizational management analysis in some way pertains to whether organizations do well. Obviously, public managers and public organizations face crucial and controversial questions about their effectiveness. Beliefs about the performance of public organizations influence their funding, legal authorization, and oversight in ways that affect the behaviors of their members and the structures and operations of the organizations. The author went on to identify that simple efficiency studies may beg or confuse many of the questions about the role and nature of government. Government activities may be less efficient because they serve different mixes of clients, follow more open and participatory procedures, or in other ways serve such goals as openness, accountability, fairness and distributional equity or stability. Rainey recognized that assessing these often abstract and value-laden goals can be very difficult.

Osborne and Gaebler identified that many people in government resist the idea of performance measurement because they have seen it done poorly. They wrote

When public organizations set out to measure performance, their managers usually draw up lists that measure how well they carry out some administrative process; how many people they serve, how fast they service them; what percentage of requests are fulfilled within a set period of time. In essence, they measure their volume of output. But outputs do not guarantee outcomes (Osborne & Gaebler, 1992, p. 150).

Coleman and Granito (1988) wrote that program managers in the public sector differ from those in the private sector in a number of ways (a) their work is influenced by pressures from many diverse interests in the community; (b) they must function in an organizational environment of great diversity; (c) they are judged not so much on financial results as on intangibles such as efficiency, which can be difficult to measure; (d) they work in a "goldfish bowl" and are visible to the media and the community; (e) they are often expected to show results in less time than corporate managers are allowed; (f) they are expected to produce results in an environment characterized by stability and reliability, which tends to make employees efficient but disinclined to take risks in order to be effective or innovative; and (g) as a result of their public role, they are expected to demonstrate strong individual leadership, sometimes to the point of not delegating authority or relying on others in the organization.

Several authors identified specific barriers to quality improvement methods or programs in the public sector. Koehler and Pankowski (1997) identified a reason why government leaders support the status quo. Frequently leaders feel they have "paid their dues" by working their way up the career ladder. They often have twenty or more years of service with the agency and realize that any change in the status quo might jeopardize their position. There are already numerous threats to their existence from outsiders who are constantly looking at ways to "down size" or "right size" government. In addition, their very existence is threatened every four years should a new governor be elected. Furthermore, each new administration brings "their" new leadership, through political appointment, to change government. Rarely does a department have the same politically appointed leader more than four years. For administrators to take an additional risk, by questioning the status quo, just adds to their uncertainty. The authors also wrote that it will not be the state legislators or members of Congress who will make government effective, but rather dedicated and sincere leaders who put the needs of the people they serve above their own self-interest. They identified that

Quality improvement in public agencies will take government leaders who are willing to step out, be proactive, and take the lead in reducing waste and improving their organizations to meet consumer demands, rather than administering programs for their convenience and personal ambitions. It will require government leaders to adopt a new set of leadership principles. These principles will require government leaders not just to serve the needs of elected officials, but rather to serve the people they manage and their customers (Koehler & Pankowski, 1997, p. 18).

Rector and Sanera (1987) wrote that political executives face agencies that are some of the most stagnant and calcified organizations in existence. Innovation and change rarely occur. In the absence of market forces that compel institutional change, government employees often stay in the same position for years doing the same job in the same way. Government agencies become very tradition-bound: change and innovation rarely enter the vocabulary of the average bureaucrat.

The text *Timely Low-Cost Evaluation in the Public Sector* (Hatry, 1988) recognized that legislative units undertake only after-the-fact evaluations, never experimental designs. Resultantly, government agency evaluation units are primarily concerned with efficiency, an

aspect of performance that is usually included in what is commonly termed "program evaluation." The text stated that government evaluation units at all levels, both executive and legislative, serve a major function in providing public officials with valuable information on past program performance. Compared to outside evaluations, they tend to use less rigorous tools, often apply themselves to more operational topics, have faster turnaround times, and focus more on efficiency than effectiveness issues. In another text, Hatry et al. echoed these findings when the authors wrote that

Local governments attempting to focus on objective measures of performance have often had to rely on measures of input, process, or work load. Unfortunately, sole reliance on such measures can encourage government employees to overemphasize quantity aspects of their job, with resulting deterioration in the overall quality of government services (Hatry et al., 1992, p. 200).

State of Illinois Quality Program

The State of Illinois has recently attempted a new initiative to enhance the performance and quality of services being delivered by state agencies. The Illinois Office of Statewide Performance Review (OSPR) was created in March 1999 by Executive Order #7 of Governor George Ryan. This executive order opened a link between the Office of the Governor and the private sector, and began the process of placing all executive branch agencies on a performance-review based management system. The program operates within the Office of the Governor to assist all agencies in the administration of state programs to achieve increasing levels of customer service, economy, and efficiency through improved quality and resource allocation (State of Illinois, 2001b).

The OSPR notes that performance management is not TQM, MBO, or Just-in-Time Management (JITM), although elements of each are contained in Illinois' performance management program. Performance management requires that managers focus on quality at the front end of a process because quality control at the back end is too late. Performance management requires that managers have and understand clear objectives, and that there be consequences for both exceeding and failing to meet those objectives. Performance management makes JITM possible because it forces managers to focus on the processes they use and understand the timing of those processes (State of Illinois, 2001b).

The OSPR notes that performance management is not a tool for managers who cannot lead, organizations that do not wish to invest in their employees, or for anyone not interested in the quality of the work and service they provide. Performance management requires managers to manage people and work processes. Performance management requires the organization to invest in its employees by training them properly, treating them fairly by recognizing the limitations imposed upon them by the work processes, and by communicating with them to allow every worker to take ownership of their actions and pride in their work. Performance management requires workers and managers both to constantly focus on quality as the means to improve work processes and the services they offer. The OSPR also wrote that performance management holds many rewards for its successful use. Performance management gives program managers and

decision makers the information they need to judge the issues of customer service, efficiency, and cost. It alerts managers to training needs and opens up communications between manager and worker, and between the different units of an organization. It allows those who work within a process to affect that process to allow everyone to take pride in their work. It forces everyone involved to focus on quality and thereby reduce costs (State of Illinois, 2001b).

Under the performance review program, annual management plans are required to be submitted by state agencies to the OSPR. The OSPR reviews each plan and assists the agencies in establishing goals, objectives, and measures that provide four benefits to the state (a) an improved ability for the governor to manage the agencies under his direction; (b) an improved ability for agencies to monitor program performance, measure program outcomes, and manage resources more effectively; (c) an improved ability to relate state programs and program successes to taxpayers; and (d) an improved ability to control costs by focusing on quality (State of Illinois, 2001b).

In its first annual report entitled *Instituting Performance Management: A Public-Private Partnership*, (State of Illinois, 2001a) the OSPR summarized its examination of state agency programs. Specifically, the OSPR analyzed 41 state agencies as directed by Executive Order #7. The purpose of the review was to take a snapshot of agency program performance during the Administration's first year and establish a performance management and reporting system. Within the report, Richard Larison, Director of the OSPR wrote

Across the broad array of state agencies a message was delivered this year: it is not enough to do a satisfactory job. The men, women, and children of Illinois deserve better. Instead of followers, we need leaders; instead of acquiescence we need achievement; instead of accepting what is, we need the challenge of change. The process of embedding performance management in the culture of state agencies has not been an easy one. Overcoming the inertia of state government proved to be problematic, but less problematic than rationalizing the failure that would ensure from a non-effort (State of Illinois, 2001a, p. iv).

The *Annual Report* (State of Illinois, 2001a) also identified that a primary goal of the program was to make customer service the heart of state government. It called for embedding customer service into the corporate culture of state government through use of a meaningful service philosophy and principles. It further recommended creating reliable and consistent customer service experiences through a new central training facility providing state employees with a structured, ongoing, customer service training program. The report noted that

As a monopoly, state government can ignore the need for customer service for only a while. While there are a small number of excellent customer service initiatives underway, there is not a statewide customer service program. The state does not focus on customer service, but the voters do (State of Illinois, 2001a, p. 4).

The report of the OSPR (State of Illinois, 2001a) noted that when evaluating individual agency performance, the Office found what most people have suspected. Illinois has never seriously attempted to implement performance management. With scant exception, the agencies

were unprepared. Although a number of senior managers clearly had adopted a "wait and see" or a "this too shall pass" attitude, the most common problems encountered were an inability to (a) articulate, and in some cases formulate, clear program goals and objectives; (b) use statistical calculations and in some cases pre-algebra; (c) articulate the ultimate goals of a program; (d) clearly identify the customers and classes of customers; and (e) move beyond statutory performance baselines. The report went on to recognize that these problems should neither shock nor offend anyone. They are symptomatic of both the education system and the luxury of government being, in most cases, without any substantive competition. The report noted that the overwhelming majority of agencies fell in the "middle of the pack" category when their performance methods were analyzed. The OSPR report recognized that the agencies generally (a) had a lack of senior-level management acceptance of performance management coupled with a fairly strong acceptance by mid-level management, (b) exhibited a fairly rigid adherence to statutory performance guidelines, and (c) were hesitant to change. In specific reference to analysis of the OSFM, the OSPR recognized that a strength of the OSFM was its "activity measures" but a weakness of the agency was its lack of "performance measures."

Other EFO Studies Relating to QCPs in Public Agencies

In his 1992 EFO research paper entitled *Quality Improvement Teams: The Team Member's Viewpoint*, Jerauld recognized that quality improvement teams have been in existence in the American private sector for almost a decade. Generally, such teams are seen as beneficial for several reasons. The author wrote

By utilizing employee participation in decision making, quality and productivity are improved, which directly benefits the customer and the company. Secondly, individual employees benefit through self-improvement in areas such as planning and problem-solving, report writing, oral skills, and working within a group. Finally, everyone wins through increased morale, a sense of belonging, and increased feelings of pride and satisfaction (Jerauld, 1992, p. 1).

Jerauld (1992) examined how fire service personnel in his department perceived their participation in quality improvement teams, including areas of problem-solving, interpersonal skills, and morale. He found that overall, the response indicated that the participating employees felt strongly that they were receiving personal benefits from their efforts. More than 90 percent indicated they would become involved again given what they know now about the process. However, Jerauld did find that several employees expressed concern about the reduction in administrative support for the program, which was blamed on political and economic pressures.

Kirchner (1993) in his EFO research paper entitled *Analyzing the Implementation of a Citation Program to Achieve Fire Prevention Code Conformance from Recalcitrant Violators in East Cleveland, Ohio* recognized a morale problem with fire prevention inspectors when their efforts did not produce desired outcomes. Specifically Kirchner wrote

The lack of compliance with violation notices left some structures with severe fire safety problems that threatened not only the lives of the citizens who worked and lived in the buildings, but also the firefighters who were called to fires in these

structures. The morale of the inspecting officers declined as they realized that their work did not produce the desired results. The quality of the inspections became an issue as inspectors grew tired of fighting an uphill battle (Kirchner, 1993, p. 7).

In his 1990 EFO research paper entitled *Total Quality Management and the Fire Service*, Silk recognized that

The Deming style of quality management is not a quick fix or a magic bullet; it is a top-to-bottom revolution in the definition of "business as usual" that takes years to accomplish. It cannot be done quicker or easier in the fire service than in industry (Silk, 1990, p. 17).

Rowland (2000) in his EFO research paper *Benchmarking the Fire Service: Focusing on Results and Improvements*, recognized that benchmarking and performance measurement are appropriate steps for increasing accountability in government operations and to help improve performance. All levels of government are finding a growing need to adopt systems that continually assess processes and improve their services. He wrote that benchmarking within the public sector is being utilized, but on a much more limited basis than in the private sector. Although the term benchmarking is increasingly used in the fire service, the efforts are often better described as networking or modeling. Rowland concluded that private sector benchmarking is much further developed and is often seen as a necessary component of the strategic planning process. Competition forces the private sector to stay current and continuously improve and innovate in order to survive. This also results in the private sector placing more emphasis on research and development than does the public sector.

O'Brien (1994) recognized that services provided by government must be properly evaluated to assure they meet the needs of their customers and are delivered in a cost-effective manner. He noted that after reviewing the literature relating to TQM, it is obvious that the past practices of a punitive quality assurance approach are no longer serving the needs of customers. O'Brien stated that QA means retrospective review or inspection of a product or service and does not take input from the customer up-front. He wrote that most QA programs fall under the management style of MBO, which traditionally focuses on short-range goals, quota, and immediate results.

Surprisingly, in his 1994 study of quality improvement methods entitled *Making Objective Decisions Using Quality Improvement Tools*, Smith wrote that no information could be found illustrating the use of quality improvement (QI) tools in fire service TQM organizations. The author also noted that the findings of the research indicated a common link between current uses of QI tools in private TQM organizations and their application in the fire service. He concluded that TQM requires mastering the three corners of the TQM triangle; leadership, teamwork, and objective decision-making. Smith also recognized that the use of QI tools has positive implications for the fire service. QI tools can help managers and teams collect, organize, interpret, and display data in steps of the QI process. Both problem solving and planning can be enhanced by the use of QI tools. Organizations developing teamwork and

leadership will find that QI tools will offer organizational alignment and direction toward organizational goals and objectives.

The purpose of Lea's (1993) EFO research project entitled *Can the Efficacy of Fire Codes and Their Enforcement be Demonstrated?* was to locate management tools, which would allow the Division of Fire Prevention to more effectively manage its fire prevention programs by demonstrating the efficacy of its programs. Lea intended that this would hopefully be accomplished by demonstrating not only how fire codes improve life safety for the citizens of the state but also that the program is cost effective in terms of identifiable decreases in the number of fires and in the dollar losses per fire. Unfortunately, Lea found that in reviewing the literature, it became apparent that few studies had been conducted to determine the effectiveness of fire prevention inspection programs. Lea further wrote that those, which had been conducted in the past, were crippled by simplistic approaches, which were unable to clearly define in measurable terms the output of fire prevention programs. Because there was no clearly defined unit of measure of output, it was generally difficult to meaningfully study the effectiveness of inspection programs or of inspection program components. Most studies satisfied themselves with continuing those things, which readily lent themselves to quantification.

Labor Contract Restraints Against Instituting Quality Programs

In the ICMA guide *Productivity Improvement Techniques: Creative Approaches for Local Government*, Matzer (1986) wrote that "productivity improvement programs can no longer be imposed by management 'top down'. Virtually every successful productivity program initiated in the public sector in recent years has explicitly sought and received labor's cooperation" (p. 12).

OSFM fire prevention inspectors are represented by Local 4408 of the Illinois Federation of Public Employees (IFPE). This union represents several groups of Illinois State workers including teachers, security officers, and mental health workers. Illinois is a collective bargaining state, and a written collective bargaining agreement does exist between the Illinois Department of Central Management Services (the state's personnel agency) and the IFPE. The current contract is effective from July 1, 2000 through June 30, 2004 (Illinois Department of Central Management Services, 2000).

The current IFPE-CMS contract contains general language with relevance to a change in work conditions or establishment of a QCP by the OSFM. The contract gives management (the OSFM) the right to utilize personnel, methods, and means in the most appropriate and efficient manner possible. Furthermore, the OSFM is granted the right to determine the mission of the agency and the methods and means necessary to fulfill that mission including the contracting out for, or the transfer, alteration, curtailment, or discontinuance, of any goals or services (C. McCaslin, personal interview, May 27, 2001). However, the contract also contains guarding language for the union. This is especially true if the QCP were to include establishment of changes to performance measurements. Specifically, Article XII of the contract states that

The parties agree that the Employer has the right to establish reasonable workload standards and productivity levels. In Agencies where such standards of productivity measurements exist, they shall be reduced to writing with copies to employees and IFPE. Changes in workload standards or productivity measurements, or the creation of such, shall be discussed with the IFPE prior to implementation (Illinois Department of Central Management Services, 2000, p. 51).

The contract further requires the OSFM to provide adequate training to fire prevention inspectors. Specifically, Article XXVI of the contract states "the Employer shall endeavor to provide employees with orientation to current procedures, forms, methods, material, and equipment used in their work assignments" (Illinois Department of Central Management Services, 2000, p. 48).

The working relationship between the union representing DFP fire prevention inspectors and the management of the division has been excellent. Although a grievance and arbitration process is clearly defined within the applicable contract, the number of grievances generated by personnel of the DFP is extremely low when compared with other state agencies and OSFM averages. There has not been a labor issue grievance filed by an employee of the DFP in the past 9 years (J. Ahern, personal interview, May 24, 2001).

Do Inspector Certification Programs Guarantee Quality?

Model code organizations now offer certification programs for personnel conducting code enforcement. Many enforcement agencies, including state fire marshal offices and municipal fire and building departments, are turning to inspector certification programs as an answer to quality improvement. However, the jury is still out on whether use of these certification programs can serve as part of the formula for ensuring code enforcement quality.

O'Conner (1998) in his *NFPA Journal* article "Setting the Standard for Excellence" interviewed Steven Sawyer, NFPA senior fire service specialist and manager of the NFPA Fire Inspector Certification Program. Sawyer stated that the certification program accomplishes several important goals. First, and most importantly, it establishes a consistent standard of professionalism in the fire inspection field. Second, it helps inspectors become familiar with NFPA codes and standards and teaches them how to use them. Third, it makes certification available and affordable to everyone. Fourth, it provides nationally recognized evidence of competence that's portable from state to state. And finally, it promotes continued education by requiring recertification every five years. However, it is important to note that relative to inspection certification efforts, O'Connor concluded that there are simply too many inconsistencies among programs, and as a result, certification doesn't always guarantee competence.

Hart (2001), in his article for *Fire Chief* entitled "Fire Prevention Certification: Who Needs It?" recognized that working in a fire prevention bureau often involves challenges raised by the customers (i.e., professional engineers, architects, developers, and contractors) about the knowledge and understanding of the fire prevention bureau staff members they're dealing with.

These challenges can be direct or indirect and may be raised as a defense for the issue being discussed. As a result, several states have established requirements for fire prevention staff members to be certified before enforcing applicable building and fire codes. The author noted that in Tennessee, for example, state law requires all municipal and county fire prevention and building officials to receive certification from the state fire marshal before enforcing applicable building and fire codes. Hart (2001) went on to recognize and explain the available inspector certification programs including those administered through (a) the NFPA, based on the NFPA *Fire Protection Handbook* and the *LSC*; (b) the International Conference of Building Officials (ICBO) Fire Service Division certification categories based on the Uniform Fire Code (UFC) and including UFC Inspector, Company Officer Fire Code Inspector, and International Fire Code Fire Inspector; and (c) the Western Fire Chiefs Association and Uniform Fire Code Association certification track, which is based on the 2000 edition of the UFC.

Hart (2001) also raised an interesting question by asking "Where do you start certifying the code enforcement workforce?" Consideration must be given to the costs associated with the training, education, travel, and certification exams or processes to be undertaken. Another issue is how this type of program would be implemented. In many cases it would be a meet-and-confer issue, and in some cases it would need to be phased in over time. The author also addressed the possibility of needing to "grandfather" those currently performing the functions who do not, or will not, be participants in a certification program.

Position of the Model Code Organizations

Through telephone interviews and e-mail correspondence the author investigated the position of the major code writing organizations in the United States relative to their offering of quality assurance programs specifically tailored to enforcement of their published codes and standards. A personal interview was conducted via telephone with Mr. Russ Sanders of the NFPA on June 18, 2001. He stated that the NFPA does not offer a QCP relative to enforcement of their codes. The only resemblance to quality assurance is through the Association's offering of fire code seminars to authorities having jurisdiction (AHJs). The NFPA has seen a distinct reduction in the number of questions presented to the organization by AHJs as the result of these increased training efforts. Mr. Sanders also addressed the NFPA inspector certification program, stressing that meaningful training that can be offered before individuals begin their inspection career is vital.

Mr. Jim Dolan of the Building Officials and Code Administrators International (BOCA) answered in an e-mail dated June 23, 2001. He stated that BOCA offers an "audit service" wherein a complete review of the inspection program would be conducted. Mr. Dolan also explained that when employed by the State Fire Marshals Office of New Jersey, he developed a system to improve the quality of code enforcement inspections. The agency moved away from a system whereby a certain number of inspections had to be made in a predetermined amount of time. Instead, a program was developed to foster more quality in the work being done. Under the revised program, an inspector could make only one reinspection of a property before it was forwarded to the compliance section. Each inspector was monitored on a quarterly basis to determine (a) how many violations were issued per inspection, (b) what types of violations were

issued and did they match the occupancy classification being inspected, and (c) how many times were particular violations issued? Dolan noted that by analyzing data over a period, you can pick up patterns very easily and review them with the inspector. (It is interesting to note that the New Jersey State Fire Marshals Office indicated in their survey response to the author of this research that a quality program is not currently employed by the agency).

Mr. Mel Cosgrove of the Southern Building Code Conference International (SBCCI) answered via his e-mail dated June 6, 2001. He wrote that the SBCCI has developed standard, camera-ready inspection forms to assist inspectors, although they are now outdated and do not apply to the new International Fire Code. Furthermore, the organization has initiated a new interactive internet educational program for inspectors. The program allows the inspector to log on any time, 24-hours per day. Other than this, he was unaware of any quality assurance programs aimed at the fire inspector.

Finally, Ms. Beth Tubbs of the ICBO answered an e-mail inquiry with her reply dated June 6, 2001. Ms. Tubbs wrote that the ICBO is not really in the role of addressing the quality assurance issue--especially for fire code enforcement. Ms. Tubbs mentioned that in the "seismic world of enforcement" a mistake can lead to large media events with political effects. In contrast, she stated that mistakes in fire code enforcement rarely lead to such disastrous incidents. She also commented that hopefully, performance-based codes will make us realize the need for maintenance and how we reliably make it happen. She commented that perhaps the fire department should not be the only one with that responsibility.

Leaders Must Buy-In to Quality Improvement Programs

Several sources cited the importance of an organization's leaders fully supporting or "buying into" the quality improvement program in order to ensure success. Referring to the development and implementation of quality programs, Asaka and Ozeki (1990) noted that every person in the company must be involved from top management to supervisors to production workers. In an article entitled "The Role of Performance Management," Halas (1993) recognized that for the quality improvement process to be truly successful, it takes the full commitment of management throughout the organization and throughout the program. Similarly, in his 1989 EFO research paper *A Quality Improvement Process*, Gaston concluded that implications facing the fire service organization that establishes and implements a quality improvement process will have many positive returns on the long-term basis. However, management commitment to the process (from top on down) is vital when affecting any organizational culture change.

Likewise, Burdick (1992) in his EFO research paper entitled *A Plan to Implement a Total Quality Management Program in The Littleton Fire Department*, wrote that throughout the research for his paper it was observed that successful organizations using TQM had an individual at the helm that was driven almost entirely by an unrelenting desire of attaining a new order. In *A Passion for Excellence: The Leadership Difference*, Peters and Austin (1985) wrote that any device to maintain quality can be of value. But all devices are valuable only if managers--at all levels--are living the quality message, paying attention to quality, and spending time on it as evidenced by their calendars. The authors recognized that quality performance requires effort

that many leaders and managers are not always willing to give to an organization. Specifically they wrote that "Doing better than average takes tenacious preparation" (p. 6).

Newton (2000) in his EFO research paper on total quality improvement recognized the importance of organization leaders showing continual support for quality improvement programs. He noted that attaining total participation requires a dedicated effort by management. The author's research indicated that management and leadership must focus between 15 percent and 20 percent of their time to the quality initiative if it is to succeed. However, most organizations see this commitment only during the initial implementation phase. When this initial enthusiasm is over, people watch to see if support is withdrawn. If withdrawal is seen, the organization will flounder in its quality effort. Taylor and Rosenbach (1989) wrote that the chief executive must be an information processor. Successful executives do not await information but pursue it relentlessly. Bad news is sought with more vigor than good news, for it must be known early enough to do something about it.

Barry (1991) in his text *Management Excellence Through Quality*, also recognized that leaders can be instrumental in preventing quality burnout. The author explained that quality burnout happens when individuals start to lose interest in a new focus on quality. Rowland (2000) wrote that the difficulty for the fire service is not the development of a continuous improvement process, but in integrating this process into the management and decision making systems of the leadership. Referring to the execution of changes needed to implement quality improvement programs, Hall et al. (1993) wrote that even with sufficient breadth and depth, a re-engineering project will fail without the full commitment of senior executives.

In *Total Quality Management in Government*, Cohen and Brand (1993) wrote that the definition of the effective public manager changes under TQM. The old model of a manager who can work around the rules and get the job done--the bureaucrat--is obsolete. Under the new paradigm, the effective public manager does not accept the rules as given. Rather, a modern manager should frequently ask questions about work processes. For example (a) is this step needed, (b) can this step be improved, and (c) who is the customer of this work? The text advocates that new procedures be tried and evaluated. Often processes that we suspect are less than useful are continued until a better substitute is developed; however, a great value is placed on the creative manager who can question current practice and stimulate employees to develop new, more productive work procedures.

Employee Participation in Quality Improvement Programs

Several authors recognized the value to management of including employees in their decision-making processes as a key factor in quality improvement success. As early as 1975, Singular recognized that MBO may fall short of its quality improvement goals because it ignores the employee for the sake of higher production or output. Singular wrote that to be successful, the goal-setting process in any organization requires new forms of cooperation and communication throughout the organization. Therefore, any successful goal-setting program must not only satisfy the needs of the organization, but also must simultaneously take into account the needs of each individual employee so that he or she will feel an interest in the organization's objectives and thus gain satisfaction from helping to achieve them.

The text *Management in the Fire Service* (NFPA, 1979) also was one of the earlier documents to warn against the pitfalls of a goal-oriented QCP that ignored the employee. The book recognizes that many goal oriented programs concern themselves only with the goals of the organization--with what the organization seeks to accomplish--thus ignoring the personal needs of the employees. Such programs can never gain the same full and enthusiastic support that more soundly based programs can achieve.

In their work *Transformational Leadership in Government*, Koehler and Pankowski (1997) wrote that success and quality in government is not a matter of telling followers what to do and getting them to do it, but rather enabling individuals and teams to act in the best interest of the organization. Empowering the workforce is the key to improving government efficiency and effectiveness. Similarly, in *Breaking Through Bureaucracy*, Barzelay (1992) recognized that psychologists specializing in the study of work argue that employees feel accountable when they believe intended work outcomes are consequential for other people, receive information about outcomes, and can attribute outcomes to their own efforts, initiatives, and decisions.

In *Reinventing Government*, Osborne and Gaebler (1992) noted that Edwards Deming felt that employee involvement was critical to quality improvement in governmental functions. They quoted Deming as specifically saying

Organizations can solve their problems most effectively if the employees get involved in crafting the solutions. The employees know the system best, and they know where the problems lurk. Even if a manager can diagnose the problem, without the employee buy-in it is difficult to solve it. Hence TQM uses a team of employees--often known as quality circles--to tackle most problems in the workplace (Osborne & Gaebler, 1992, p. 160).

Mikel and Schroeder (2000) recognized that when employees know what their company stands for and how they are to uphold those standards, they are much more likely to make decisions and behave in ways that support the organization's goal. Hatry, et al. (1992) echoed this finding in their work for the Urban Institute when they concluded that even if performance is not formally tied to employee benefits, it can be beneficial to provide employees with feedback about the outcomes of their efforts. For example, findings from customer surveys can help make government employees more sensitive to citizens' perceptions of the services provided and encourage them to be more responsive to citizens' needs.

Nelson, in his EFO research paper entitled *Award Winning TQM Implementation: A Worthwhile Goal for the Fire Service* (1999) wrote that the one constant for insuring quality for a service organization discussed by many quality experts is the important role every employee plays. He found that creating quality circles, quality councils, and involving the employee in the decision making process are central to TQM. Similarly, in his 1991 EFO research paper *Employee Based Decision Making*, Paxson stated that many employees feel a lack of involvement in matters that directly affect their jobs. Furthermore, Paxson recognized that when given more opportunity for self-direction, there results a growing experience on the part of the employee which brings about an observable improvement in employee morale and quality.

Rowland (2000) in his EFO applied research paper *Benchmarking the Fire Service: Focusing on Results and Improvements*, recognized problem solving in TQM organizations is accomplished through participation and teamwork and that processes developed without leadership and teamwork will result eventually in failure. Walton (1991) quotes Edwards Deming as saying, "He that starts with statistical methods alone will not be here in three years" (p. 33). Walton further notes that employee empowerment and teamwork are impossible in many organizations that operate under existing conditions of annual appraisal of performance and MBO. These types of management techniques create employee fear and hopelessness in the organization. He wrote that Deming called fear and competition in the work place "retroactive management." Walton stated that Deming even went as far as to say that failure to understand people is the devastation of western management.

The Role of the Inspector is Getting More Complicated

Adding to the difficulty in assuring quality in code enforcement services is the fact that the role of the typical fire prevention inspector is becoming more complicated. In an article for *Fire Chief*, Hart (2001) wrote that the last hundred years have seen dramatic changes in the way our society designs, constructs, and inspects the buildings we use and live in. He noted that the requirements outlined in our construction codes and standards have become much more detailed and lay out specific criteria as to the various construction elements needed to comply with these codes and standards. Furthermore, Hart stated that the enforcement of building and fire code regulations requires a greater amount of time and effort in which to perform adequate plan review, back-check, permit issuance, field inspection and final acceptance. Lastly, Hart noted that the training and education of the staff members of the AHJ is increasingly difficult because of the typical problems of staffing levels, workloads, availability of training and educational programs, and funding for this function.

O'Connor (1998), writing for *NFPA Fire Journal* echoed Hart's writings when he identified that as recently as 20 years ago, the job of fire inspector was seen by many in the fire service as a way to retirement, largely because the scope and demands of the position were so limited. O'Connor however, went on to say that a lot has changed over the last two decades. The built environment is more complex. We know a lot more about the way fires develop and spread. And the codes, standards, and systems we use to prevent, detect, and contain fires have become infinitely more sophisticated. All of these changes have had a dramatic impact on the fire service in general and on the fire inspector in particular. In addition to being a code enforcer, today's fire inspector must also be part detective, part reporter, part technical consultant, part missionary, and part salesperson. Corbett (1990) writing for *Fire Engineering* magazine recognized that recently some states have begun mandating minimum, standardized training levels for fire inspectors and investigators. The author advocated more states follow this lead.

Scott (1997) in his article "The New Inspector: Everywhere at Once" identified that the job of a code enforcement inspector is a very demanding career, and the technical expertise required to handle the job means that individuals today tend to be more educated than the average firefighter. Scott quoted National Fire Academy instructor Bruce Hisley as saying that

complex code enforcement and fire protection decisions are being made by people with little or no training and possibly no understanding of the implications of those decisions. Hisley believed this is a big problem for AHJs.

Nigro and Nigro (1989) identified that inspection agencies face problems beyond employee motivation. The authors pointed out that not only are managers expected to articulate how their program benefits the community but must also prepare to withstand program reviews, such as central budget and management staffs, legislative committees, commissions, and post auditors serving the legislative body of the jurisdiction. Three types of evaluations can be anticipated (a) overall assessment of program impact and effectiveness; (b) evaluation of the relative effectiveness of different program strategies and (c) evaluation of individual projects to assess managerial and operations effectiveness.

The difficult task of attracting and hiring qualified personnel for fire prevention enforcement is more understandable after examination of Bender's (1997) review presented in the *NFPA Fire Protection Handbook*. Bender wrote that fire prevention division personnel should consist of those department members best qualified for this work. In addition, qualified technical specialists should be available when possible--the department's overall effectiveness depends upon the technical skills the fire prevention personnel possess. It is also important that such personnel be able to properly communicate technical requirements to building owners, architects, engineers, and other professionals involved in the construction industry. Furthermore, Bender suggested that fire inspectors or fire prevention officers should be selected for these tasks based on their technical training, expertise, and their ability to motivate people. Individuals in this position are responsible for conducting fire inspections and also may be responsible for division duties, including fire investigations, public education, or plans review among other assignments. Finally, Bender recommended that an inspector conducting an inspection should be able to convince property owners or occupants to maintain or improve fire safe conditions. The inspector who relies only on police power cannot accomplish as much as the inspector who relies on salesmanship. Strict enforcement of the fire law of the jurisdiction is necessary to achieve compliance and to assure fire safe conditions in the community.

As an overall benefit to the community they serve, Bender (1997) also suggested that the public looks to the fire service for answers and advice concerning fire problems. Due to its unique ability to provide this information, the fire department should offer consulting services to the community. Fire prevention officers must be able to explain fire codes, fire-related sections of building codes, and the application of specific standards to design professionals, contractors, and members of the building trades. Consultation also should be available directly to property owners, managers, occupants, and members of the general public, who may not be as familiar with fire problems and their solutions.

Fixing the System--Not the Employees

Several authors summarized the beliefs of quality experts relative to the source of low-quality, or inadequate, service delivery. Specifically, they addressed whether problems of low-quality performance and inadequate service delivery stem predominately from problems with ill-

designed systems and inefficient management or errors by personnel that work within such systems or under such management.

In *The Team Handbook*, Scholtes (1991) recognized that Dr. Juran referred to this as the "85/15 Rule." The Rule is based on the premise that 85 percent of all problems in a business can only be corrected by attention to the systems through which work is done and less than 15 percent of the problems that exist are under the worker's control. Elmuti and Kathawala (1999) also noted Dr. Juran's rule but quoted a slightly lower percentage when they stated that "Juran warned that the majority of quality problems are the fault of poor management, rather than poor workmanship. In general, he believed that management controllable defects account for over 80 percent of the total quality" (p. 3).

Aguayo (1991) also noted Dr. Deming's beliefs relative to this subject by stating that Deming estimated that as many as 94 percent of the problems are problems of the system and not the employee. Hagan (1994) noted that it is now generally accepted that poor quality and poor overall performance is at least 80 percent the result of the process and not the employee, and the process is the responsibility of management. Walton noted that by concentrating on statistically solving problems within the system, management can accomplish more than if focus is placed on the employee as the source of the problem (1986).

The ICMA guide entitled *Productivity Improvement Techniques: Creative Approaches for Local Government* (Matzer, 1986) recognized that the problems of declining productivity have numerous causes, but many of them are rooted in a company's structure and the misapplication of outdated principles. The text clearly placed the blame for declining productivity on management stating that

If productivity is to be improved, there must be a stated corporate productivity objective that senior management establishes and supports. Second, there must be an understanding that senior management and it alone, is responsible for productivity. Middle managers address utilization of workers. First line supervisors are responsible for efficiency of workers. But senior managers, by defined organizational structure, are the ones charged with seeing that their companies produce quality products and service at the lowest costs (Matzer, 1986, p. 73).

In *The End of Bureaucracy & The Rise of the Intelligent Organization*, Pinchot and Pinchot (1993) indicated that a system that manages work from a distance by setting uniform procedures and issuing simple orders cannot deal with the fact that we no longer face a uniform or simple world. Increasingly often, uniform answers and systems are not responsive to the delivery of inputs and outputs required.

PROCEDURES

Evaluative research, that included examining historical perspectives, was conducted through several avenues including literature review, personal correspondence, personal interviews, and use of a survey instrument.

Definitions and Clarification of Selected Terms

Authority Having Jurisdiction (AHJ)--for purposes of this research, the code adopting and code enforcing body of a unit of government. The OSFM DFP is the AHJ for the State of Illinois relative to enforcement of the state's fire prevention code.

Benchmarking--a quality improvement process discussed in this research which stresses the importance of comparing and measuring an organization to other organizations. Examined literature made reference to vertical benchmarking, which involves comparing an organization to other organizations in the same industry or service area. Also, horizontal benchmarking was discussed which involves comparing an organization to other organizations outside of their normal line of work.

Customer--as used in this research, a term that includes those served by an organization or company, whether that means selling products to, providing work for, or even regulating the customer. Literature examined for this research noted that there are external customers as well as internal customers (with internal customers being the employees of the organization).

The 85 Percent Rule--a concept supported by Dr. Deming and Dr. Juran as well as other quality gurus which recognizes that in most organizations, approximately 85 percent of quality problems can be attributed to poor design of work systems developed by management as opposed to employee error.

ISO 9000--a quality certification process discussed in this research. "ISO" is an acronym for the International Standards Organization. The ISO 9000 series of standards were developed by the organization to define objective criteria for a company or agency to deliver high quality products and services to their customers. The 9000 series standards are applicable to private as well as public organizations.

Life Safety Code (LSC)--NFPA Standard 101. This is not a mandated standard of the Federal government, but rather an NFPA standard that addresses fire protection design, construction, and operating criteria. The *LSC* is only enforceable as law, rule, or ordinance if the AHJ has adopted it. Hundreds of municipalities and several state fire authorities have in fact adopted the standard. The *LSC* is the applicable standard for fire prevention and safety in Illinois.

Management by Objectives (MBO)--a quality improvement process discussed in this research. A process whereby superiors and subordinates of an organization jointly identify its common goals. The process relies heavily on quality assurance by measuring the number of defects in a product or service compared to predetermined goals and objectives. Today, MBO has come to be viewed as an outdated form of quality control with inherent problems that makes its usefulness limited in progressive organizations.

Model Code Organizations--code development organizations in the United States that own the rights to, and oversee the process of development and publication of, the nation's most recognized model fire prevention and building codes. In addition to the NFPA, these

organizations are primarily recognized as the Building Officials and Code Administrators International (BOCA), the International Conference of Building Officials (ICBO) and the Southern Building Code Congress International (SBCCI). Representatives of these code-producing authorities were interviewed for this research in order to gather information relative to quality enforcement procedures advocated for the enforcement of their codes and standards.

National Fire Protection Association (NFPA)--publishers of the *LSC*, which has been adopted as a statewide standard in Illinois. A dues paying membership organization dedicated to protecting people and property from fire. Contrary to the belief of many, this organization is not a federal agency and NFPA standards and codes are not enforceable unless adopted by an authority in a particular jurisdiction.

Office of Statewide Performance Review (OSPR)--an Illinois agency formed by order of the governor in 1999 for purposes of enhancing the quality of services delivered by state agencies.

Quality Assurance (QA)--a quality improvement process discussed in this research. QA is a form of management by objectives in which end products or results of services are measured to determine adherence to pre-determined standards or goals. QA is thought by many modern quality experts to be antiquated because it simply measures and judges after-the-fact results rather than ensuring quality from the beginning of a process or service.

Quality Circles (QC)--a quality improvement process discussed in this research. A quality circle is a small group of people within an organization who meet on a regular basis to analyze problems and recommend the best options for solutions. The group typically includes representation from all levels of employees. QCs are an extension of the participatory style of management and are based on the premise that those employees closest to work that is to be improved will have the most relevant input to the improvement process.

Quality Control Program or Quality Control Process (QCP)--terms used interchangeably throughout this research document to refer to the methods and procedures employed by organizations to enhance the characteristics of their product or service delivery as well as the treatment of their employees.

Six Sigma (6σ)--a quality improvement process discussed in this research. Six Sigma is a form of statistically based quality control developed by staff at Motorola, Inc. and used extensively in private industry to improve customer satisfaction. The term "six sigma" relates to the degree of quality, which companies hope to attain. In statistical methods science, "sigma" is the mathematical term used to designate probability. The sixth degree of sigma refers to tolerable errors or mistakes being reduced to a level that is six times removed from the regularly expected error distribution.

Statistical Quality Control (SQC)--a quality control process discussed in this research. SQC relies heavily on data relating to company performance as well as formulas and approaches derived from mathematics and the science of statistics in an attempt to interpret the data and plan for future quality improvements.

Total Quality Management (TQM)--a quality control process discussed in this research. Dr. Edwards Deming pioneered the approach. TQM is a management philosophy and set of guiding principles that stress continuous improvement through people involvement and measurements focusing on total customer satisfaction. Quality experts have developed several forms of TQM over the years including total quality leadership (TQL), total quality improvement (TQI), continuous quality improvement (CQI), and total customer satisfaction. The essence of TQM involves the elements of continuous improvement, a personal orientation, quantitative methods, and a focus on customer satisfaction. Generally considered the opposite of quality control, TQM advocates building quality into a process so that you do not have rejects or mistakes.

Literature Review

Literature searches were initiated at the National Emergency Training Center's Learning Resource Center in March 2001 during the author's attendance at the NFA's *Executive Leadership* course. Additional searches were conducted within the public library systems of the city of Chicago and villages of Bartlett and Schaumburg, Illinois. The private libraries of the University of Illinois at Chicago and the author's alma maters, the Illinois Institute of Technology and Roosevelt University, were also consulted. Extensive searches were also conducted on-line through Internet search engines to identify published documents, Web sites, organizations, and newsletters with content relative to the subject of quality control measures, and public QCPs in particular. The author's private collection of fire prevention and code enforcement publications as well as past annual reports of the OSFM and other fire prevention agencies were also examined.

Personal Interviews and Correspondence

Personal interviews and written correspondence were conducted with experts in various applicable fields. Personal interviews were conducted with Illinois Deputy State Fire Marshal Jack Ahern. Mr. Ahern is responsible for fire prevention code development and program delivery on a statewide basis in Illinois. He was interviewed on April 15, 2001, May 24, 2001, May 26, 2001, May 30, 2001, and June 25, 2001. Interviews were also conducted with OSFM Regional Administrator Larry Harrison. Mr. Harrison supervises fire prevention inspectors assigned to the southern half of Illinois. He has supervised OSFM DFP field inspection activity for more than 20 years. Mr. Harrison was interviewed on April 15, 2001 and May 10, 2001 to gain insight into inspector activity and performance. OSFM Deputy Director Dan Williams was interviewed on May 21, 2001. Mr. Williams offered insight into OSFM funding, contractual obligations, and personnel issues. Mr. John Pavlou, OSFM General Legal Counsel, offered information relative to the history of the OSFM as well as Illinois laws and past court decisions applicable to fire prevention code enforcement. Mr. Pavlou was interviewed on May 28, 2001. Ms. Connie McCaslin is the Director of Personnel for the OSFM. She was interviewed on May 27, 2001 to gain insight into the content of the collective bargaining agreement applicable to OSFM DFP inspectors, especially relative to the introduction of new programs or changes to working conditions for inspectors.

Model code organizations responsible for fire prevention, building, and life safety code development were also contacted pertaining to their familiarity with QCPs, either recommended or adopted, relative to enforcement of the codes and standards they produce. Specifically Mr. Russ Sanders, Midwest Representative of the NFPA was interviewed via telephone on June 18, 2001. Mr. Jim Dolan of BOCA answered via e-mail dated June 23, 2001. Ms. Beth Tubbs of the ICBO answered in her e-mail dated June 6, 2001, and Mr. Mel Cosgrove of the SBCCI also answered in his e-mail of June 6, 2001.

Survey Instrument

A survey instrument was developed to collect information from fire agencies across the nation (see Appendix C). The survey served to collect data relative to a fire agency's familiarity with, or their past application of, a QCP for quality assurance in code enforcement. The survey was sent to each state fire agency (i.e., fire marshals office or equivalent) in the United States and the fire departments of the 30 most populated cities in the country.

The same survey was mailed to 30 fire service organizations (other than those identified above) where a graduate of the National Fire Academy's Executive Fire Officer Program (EFOP) could be identified in the administration of the agency. Although not a random survey of the fire service at large, it was felt that departments having administrative staff who have attended the EFOP typically represent agencies that are on the cutting edge of progressive public agency service. Therefore, it was hoped the likelihood of at least familiarity with, if not application of, a QCP for code enforcement would be increased by polling such departments. The departments surveyed via this process were chosen from a list of EFOP graduate departments supplied by the United States Fire Administration. The departments on that list were numbered, and then a random number generator available at www.lavarand.sgi.com/cgi-bin was used to choose 30 random numbers (departments).

The survey requested objective information from each state and department pertaining to, among other items (a) whether the administration of the agency or department was familiar with a QCP; (b) whether the agency or department actually applied a QCP for any process in their code enforcement service delivery; (c) if a QCP was applied, to what functions of the department's service delivery was it applied; and (d) if some version of a QCP was used by the department, specifically how was it used? The survey was entitled *Survey of Code Enforcement Agencies--Use of Quality Control Programs*.

The survey instrument was first reviewed by coworkers of the author in the Illinois OSFM for clarity of content and functionality of design. It was not, however, field-tested on sample groups. The elimination of sample testing was based on consideration of the content and nature of the survey. The survey questions are objective rather than subjective in nature. The survey requested factual and quantitative data rather than personal feeling or opinion. All of the information requested in the survey could have otherwise been obtained by examining the standard operating procedures and records of each individual fire authority. Use of the survey instrument saved time and effort that would have been necessary to request such documents through freedom-of-information procedures from each individual jurisdiction.

The surveys were originally mailed on April 18, 2001. To encourage responses, each survey was covered by an original (not a photocopy) letter on Illinois OSFM stationary (see Appendix D). Furthermore, in addition to the cover letter and survey instrument, each mailing included a stamped, self-addressed envelope to accommodate return mailing to the author. Agencies that had not responded by June 8, 2001 were mailed another survey package, under a second cover letter that again requested their response (see Appendix E). This second mailing again included a stamped, self-addressed envelope to the author.

When a survey answer appeared contradictory in comparison to other information offered in the response, the author re-contacted state authorities by telephone or written correspondence for clarification. Due to time constraints imposed by EFOP applied research guidelines, July 20, 2001 was established as a cut-off date for collection of survey response information. State agencies that had not responded to either the first or second survey mailing by July 20, 2001, or returned their survey after that date, were considered "non-respondents."

The content of returned surveys was entered into a table-format database using Microsoft Excel 97. Tables were developed to compile survey information from state and city fire authorities (see Appendix F). All tabular information was then imported into Microsoft Word 97 format for inclusion in this report.

Assumptions and Limitations

An expected limitation of the research was that some states and cities did not return a survey. Returned survey results were further limited by a number of other factors. The first was an assumption that individuals with sufficient knowledge of the subject to complete the survey answered all survey questions accurately. This appears to have not always been true. Some surveys indicated apparent conflicting information in the answers offered. When errors were suspected in survey responses, follow-up telephone contact was made with the person who had completed the survey. Although this process worked well to clarify discrepancies, it cannot be assumed that completely accurate information was contained in other surveys where conflicting answers were not obvious enough to require follow-up telephone contact.

Another identified survey limitation was that a small number of state agencies returned two completed copies of the survey instrument, but with differing responses. This could have resulted from two scenarios: (a) The survey form had been duplicated within the state, and assigned to more than one person to provide a response; or (b) The first survey that was received by the agency may have been in the mail returning to the author when a second survey was mailed to that state because of an assumed no-response from the agency. In the cases where multiple surveys were returned from the same agency with differing information, telephone contact was made with respondents and clarification of discrepancies was attempted.

Some returned surveys contained sporadic unanswered questions. In most cases, comparison with other responses contained in the same survey allowed determination of the reason for this exclusion. However, when it was not possible to determine intent by cross-matching blank question responses with other survey responses, assumptions were made that the

information was not available, did not apply, or the respondent was unaware of the correct response.

In addition, survey responses from some agencies indicated that the state or city was in the process of procedural modification at the time of the survey. Therefore, assurance of the accuracy of results can only be made as of the exact date of survey completion. Standard operating procedures may now be in place that are significantly different from those existent at the time of the survey.

A final limiting factor was the expected length of this ARP. Literally hundreds of literature sources with relevant QCP information were identified, retrieved, and examined for this research. Although understandably lengthy when compared to ARP expectations, the author had to eliminate much of the information gathered that could have even more comprehensively addressed the issue of public-agency quality control.

RESULTS

In answer to the specific research questions

1. How can a QCP benefit the OSFM's DFP?

The development and application of a QCP within the OSFM's DFP can serve to (a) increase customer satisfaction; (b) reduce the agency's exposure to litigation; (c) allow for more efficient use of limited resources available from the Illinois Fire Prevention Fund, thus allowing a greater number and variety of services to be provided to the citizens of the state; (d) increase organization effectiveness rather than simply organization efficiency by increasing the quality of performed inspections, thus resulting in lowered fire damage, fire injury, and fire death totals; (e) assist the agency in accomplishing its true mission by exposing wasted efforts and ineffective programs; (f) allow the agency to overcome a predominant perception by the general public that government is wasteful and cannot be counted on; and (g) force the agency to examine its treatment and support of internal customers (employees).

2. What factors are important to the establishment and operation of a QCP?

The research revealed that approaches to ensuring organizational quality have evolved from programs that concentrate on after-the-fact product inspections to more modern methods that advocate (a) employee participation, (b) identification of, and addressing, potential pitfalls at the process planning stage, (c) recognition that most quality problems result from an ill-designed system or process as opposed to poor employee performance, (d) a need to be acutely in touch with data related to the organization's service delivery as developed by a proactive measurement system, (e) long-term support by the organization's management, (f) concentration on increasing effectiveness rather than simply increasing efficiency, and (g) on-going concentration on quality delivery as opposed to a one-time quick-fix approach.

3. Are QCPs developed for the private sector applicable to public agencies, and fire service code enforcement agencies in particular?

Although much of the literature stressed that QCPs developed within private industry are directly applicable to public agency service delivery, it is apparent that a drastic paradigm shift is necessary for the fire prevention enforcement world to accept this. Much of the examined literature revealed a perception that "service is service", whether provided by private corporations or public agencies. However, close examination of the material results in an understanding that such perceptions are supported only if certain caveats are adhered to, including (a) those served by public agencies must be viewed as customers; (b) public agencies who long have viewed their clientele as captive audiences must be reminded that privatization and outsourcing, especially for non-emergency services, is a reality; and (c) the public sector may be as many as 15-years behind private industry in QCP development, and (d) rapid movement into modern QCPs developed for private industry may result in culture-shock to public workforces.

Therefore, it would appear that a QCP for the public service, and for code enforcement agencies in particular, will need to be a hybrid of private industry QCPs as the result of the following factors specific to the public work environment manager (a) they are not judged in financial terms but rather intangibles; (b) they work in a "gold-fish bowl" of public examination and scrutiny; (c) they are usually expected to show results in less time than corporate managers due to political pressures and schedules; (d) they are asked to motivate employees who perform in a system where rewards are limited and the established stability and reliability of provided services stonewall change; (e) collective bargaining agreements for public employees often prohibit changes to operating or quality measurement initiatives; and (f) the final stifling factor is that managers are not subject to rewards, especially financial rewards, for increasing the quality or effectiveness of their programs.

4. How are QCPs used in other fire service code enforcement agencies?

The literature search conducted for this research revealed several sources, which addressed the viability of applying QCPs in public agencies and specifically discussed the adaptability of traditional QCPs to the fire service. However, the author's survey results revealed a dichotomy between theory and reality.

Specifically, survey responses were received from 88.0 percent (44 of 50) of state fire agencies, 76.7 percent (23 of 30) of the nation's most populated cities, and 80.0 percent (24 of 30) of randomly chosen departments, which had employed an EFOP graduate. The great majority of survey respondents indicated that their agency conducted some form of fire code enforcement. This was indicated by 97.7 percent (43 of 44) of responding state fire marshals, 100 percent (23 of 23) of responding major U.S. cities, and 100 percent (24 of 24) of responding "EFO graduate" cities. The degree of code enforcement work conducted varied, but in most cases included field inspections to apply adopted codes. Inspections were indicated as being conducted by 97.7 percent (42 of 43) of responding state fire marshals, 100 percent (23 of 23) of responding major U.S. cities, and 95.8 percent (23 of 24) of responding EFO graduate cities.

The answer to the question at the heart of this research "Does your agency use a quality control program for code enforcement?" offered the most surprising results. A vast majority of the agencies that indicated they do conduct code enforcement indicated that no control program or process was employed to ensure the quality of code enforcement. This was true of 81.4 percent (35 of 43) of responding state fire marshals, 69.6 percent (16 of 23) of responding major U.S. cities, and 70.8 percent (17 of 24) of responding EFO graduate cities.

Although a minority of code enforcement agencies indicated a QCP was used by their organization, interesting information was obtained from those organizations. In response to the question "why the quality program was developed or implemented," the most predominant response was "as the result of a proactive program to recognize and stifle potential quality problems before they occur." This was true of 75.0 percent (6 of 8) of responding state fire marshals, 85.7 percent (6 of 7) of responding major U.S. cities, and 71.4 percent (5 of 7) of responding EFO graduate cities.

Interestingly, of the code enforcement agencies that did indicate that a QCP was employed, most indicated that the program was developed by the agency or department to be specifically tailored to code enforcement work. This was indicated to be true by 75.0 percent (6 of 8) of responding state fire marshals, 85.7 percent (6 of 7) of responding major U.S. cities, and 85.7 percent (6 of 7) of responding EFO graduate cities. The second most noted explanation for how an agency's QCP was developed was either because the process was used as the result of the agency's parent governmental unit establishing QCP requirements or the use of a generic QCP.

When asked to characterize their QCPs the most frequent response by agencies was that their program measured mistakes and concentrated on correcting the error before it could recur. This was indicated by 50.0 percent (4 of 8) of responding state fire marshals, 28.6 percent (2 of 7) of responding major U.S. cities, and 57.1 percent (4 of 7) of responding EFO graduate cities. A minority of respondents characterized their QCP as simply "measuring the number of mistakes without taking action to stop the next similar mistake." This was indicated to be true by 12.5 percent (1 of 8) of responding state fire marshals, 28.6 percent (2 of 7) of responding major U.S. cities, and 42.9 percent (3 of 7) of responding EFO graduate cities.

Examining those enforcement agencies that indicated a QCP was in place, the majority indicated that the QCP had been developed only within the past 3 years. This was true for 50.0 percent (4 of 8) of responding state fire marshals, 57.1 percent (4 of 7) of responding major U.S. cities, and 57.1 percent (4 of 7) of responding EFO graduate cities. Only eight agencies indicated that a QCP relative to code enforcement has been applied longer than 3 years (Hawaii and Texas in the state category; Jacksonville, FL, Portland, OR, and San Diego, CA in the most populated city category; and Boca Raton, FL, Naperville, IL, and Norfolk, VA in the EFO city category).

Encouragingly, of the agencies, which indicated that their QCP was capable of identifying quantifiable improvements, the great majority have indeed seen quantifiable improvements in their code enforcement work. This was indicated by 100 percent (6 of 6) of responding state fire marshals, 83.3 percent (5 of 6) of responding major U.S. cities, and 100 percent (6 of 6) of responding EFO graduate cities. Houston, the one major city, which has not

seen quantifiable improvements in quality, indicated that this was because the program was still too new to judge results at the time the survey was answered, not because the program had been found to be ineffective.

5. How can a QCP be implemented in the OSFM's DFP?

Management and labor must work together to create a jointly developed QCP. The program must begin by identifying where low-quality now exists in service delivery programs. The mindset of DFP employees must be changed to view the general public as customers. Inspection procedures must be viewed as serving the greater purpose of fire safety for citizens as opposed to punitive purposes against owners. The concept and benefits of high quality code enforcement must be instilled into the work force by the repetitive reference to the benefit of the concept. This must be accomplished by including the concept in all DFP activities, training sessions, speeches, slogans, mission statements, and employee orientations. The agency's administration and the leadership of the DFP must change the emphasis from requiring simple outputs (efficiency) to concentrating on outcomes (effectiveness). The customer (the inspected public) must be asked what they want from the OSFM. This may require the advice and guidance of a quality expert.

DISCUSSION

Interpretation

The examined literature suggested that QCPs developed for application in the private sector were adaptable to public agency quality improvement (Hagan, 1994; Smith, 1994; Walker, 1994). Also, a number of sources identified the importance of QCPs to fire service organizations (Coleman 1999; Hugg, 1990; Rowland, 2000; Williams, 1990). However, one is left with the feeling that much of this writing has been rhetoric after survey results conducted for this research are examined. Clearly a predominant number of state fire enforcement agencies, large-city fire prevention bureaus, and departments that have included an EFOP graduate within their numbers, have not developed or applied even simplistic QCPs to improve the services offered by their organizations. Comments received on the returned surveys indicated that the absence of QCPs was not as the result of a perception that quality improvement was unnecessary, but rather that the organization was not familiar with, or had not taken time to examine, QCP alternatives.

Silk, in his 1990 EFO research paper *Total Quality Management in the Fire Service* identified that several barriers exist within the framework of the fire service and the governmental environment in which it operates. Barriers to improved productivity and better services for the fire service include (a) political factors that influence decision making, (b) short time horizons of politicians and top executives, (c) policy rather than performance emphasis, (d) civil service restrictions, (e) a dominant preference for the status quo, and (f) a primary emphasis on efficiency rather than effectiveness. These opinions were supported by the current research. There is a predominance of organizations, including the Illinois OSFM, that gather information and data not for quality assurance purposes, but to satisfy quota-like numbers. The research showed that this alone does not lead to improvements in the quality of work being done, and is

actually counterproductive in terms of employee morale when quotas are not set in realistic terms.

Hinton and Schaeffer (1994) in *Customer Focused Quality* wrote that as you create quality processes, your people will react. Your customers will respond. Word will spread that doing business with your company is an exceptional experience. Customer retention rates will rise, profits will increase, and employee turnover will decrease. Similarly, Brunetti (1993) wrote that if a company cannot satisfy its customers, another company will. It is in this area of the quality improvement literature that some realistic breakdown in the comparison between private organizations and public regulatory organizations occur. The concept that the regulated community must be treated as a customer is consistent within the literature and is certainly a concept that can be applied within a public agency. However, the belief that those customers can seek alternative sources of the "goods and services" provided, is unrealistic. For example, building owners are not offered an alternative company or agency to conduct the fire inspection required for licensing if they have questions about the quality of service offered by the OSFM. Although true that public agencies can be threatened by the privatization of the inspection process, the general concept that a regulated owner has an immediate choice of another regulator if they have questions about the quality of a state agency's work is unrealistic. This concept supports the work of those who argued that there are not direct comparisons to be made between the private and public sector when addressing issues relative to quality improvement (Osborne & Gaebler, 1992; Schneider & Bowen, 1995).

Literature addressing the State of Illinois' quality assurance plan indicated that the process is a combination of many programs, including TQM. Furthermore, the descriptive literature discusses the importance of solving problems at the "front-end" rather than after the problem has occurred. However, examination of the reporting forms used in the program appears to indicate a MBO approach--setting objectives in a quantitative manner and then judging output by how close an agency came to meeting those objectives. As identified by many authors in the literature review (Cartin, 1999; O'Brien, 1994; Osborne & Gaebler, 1992) such an approach is considered antiquated as it judges agency performance by delivery of a predetermined quantity of work, but does nothing to ensure the quality of the work. The program's own literature states

Popular government demands equity and accountability. Equity and accountability demand leadership, efficiency, and quality. Leadership, efficiency, and quality demand performance management. Properly implemented, performance management provides the necessary base to ensure the customers of government, the taxpayers, and service recipients, receive equitable treatment and that their government is accountable to the people it serves (State of Illinois, 2001a, p. 2).

However, an examination of the literature appears to indicate that the State of Illinois' quality assurance system leads to performance measurement in quantitative, but not qualitative terms.

Cartin (1999) reported that the June 1998 issue of the magazine *Quality Progress* contained an article describing the results of a survey to identify the main causes of TQM implementation failures. A majority of the managers responding said that failure was due to the fact that meeting improvement objectives was not tied to management compensation. Managers, like everyone, respond to real reward payoffs. Any other stated management objectives become ambiguous, if not hypocritical, to employees. A systematic, continuous approach to quality and quality improvement is the only effective option. This has particular relevance to the OSFM as a public agency. A QCP could be developed and outstanding customer service and high quality ratings achieved. However, without a means within the state pay-plan to monetarily reward managers, there is a serious question of how long the QCP would be effective.

Implications

The current absence of a QCP for the OSFM's DFP, results in a missed opportunity to increase customer satisfaction, improve the accuracy of code enforcement (which should translate into a more fire-safe environment for the citizens of the state), and allow employee "buy-in" to the improvement of the inspection process. The only revealed fact that the OSFM might take comfort in is that the agency is far from being alone in this distinction in the world of code enforcement. Survey results indicated that most enforcement agencies have not developed or applied a QCP.

As was pointed out by many authors, with so little information about results and customer satisfaction, bureaucratic agencies tend to determine employee rewards based simply on their longevity or their adherence to a quota system of work production. Resultantly, those employees protect themselves by identifying the most efficient methods to accomplish their goals--not to produce a quality product or service, but to meet the quota regardless of the reliability or accuracy of their work. This is true of the OSFM as well. Without a QCP that concentrates on improving the inspection service being offered, inspectors are fixated on performing a pre-determined number of inspections per week, or forwarding a required number of violations to meet predetermined quotas--all with little regard for the accuracy or quality of their work.

Coleman and Granito (1988) recognized that most governments do not have the luxury of organizing a comprehensive prevention program from the ground up. Pieces of a program generally are in place, but they are often firmly entrenched within various departments or divisions, and each serves only one function in the total prevention program. This is true with the OSFM DFP. The organization has been conducting fire prevention activities, including code enforcement, for decades. Completely halting current activity, reengineering the program, developing a QCP applicable to fire prevention delivery, and training both management and field inspectors is impractical. It would certainly appear that any interjection of a QCP will have to be done on a phased-in schedule to allow time for both supervisors and employees to buy-in to the program, and eliminate existing traditions, bad habits, and current less-than-quality practices. Newton (2000) in his EFO applied research paper which addressed the successful integration of a total quality improvement (TQI) program made it a point to say that there is no rule that says TQI must start in all areas of the organization at the same time. His work also advocated that

any quality improvement plan should be in writing, include a definition of purpose, contain a calculation of the inputs desired, list specific desired outputs, and define limitations of the program. This would appear to have particular relevance to the OSFM DFP.

Many authors made reference to the need to have QCPs that are in constant revision and improvement. For example, in 1987, Tom Peters' book *Thriving on Chaos*, the author wrote that there are no excellent companies. He attributed this statement to the constant changes in the new environment. The author wrote that a company in the new environment must continuously improve or other companies will replace it. Therefore, he concluded a company cannot ever achieve excellence. However, it must also be realized that there is a limit to the funding and time that public agencies can devote to QCPs. Considering limitations on the OSFM's Fire Prevention Fund as well as the ever-changing political environment that agency supervisors are beholden to, the thought that any state program could be under constant re-examination, development, or improvement appears to be unrealistic.

The NFPA text *Management in the Fire Service* noted that in the 1950s and 1960s, University of Michigan researchers conducted an extensive series of experiments in which they observed the output of departments headed by supervisors who were "employee centered" and the output of other departments headed by supervisors who were "production centered." One typical experiment focused for a long period on the clerical departments of a major insurance company. The lowest production levels were consistently found in departments headed by supervisors who placed a major emphasis on production, who exercised strict controls over employees, and who frequently intervened in the work process. When the production-centered supervisors were transferred to departments that previously had employee-centered supervisors, production fell off. Similarly, Robertson (1995) wrote that although several major insurance organizations have experimented with time quotas for conducting fire prevention inspections, this is a risky practice to follow. The complexities of building inspections and the varied degrees of understanding on the part of the individual accompanying the inspector, as well as a number of other factors, combine to make it most difficult to stipulate a fixed amount of time for a fire inspection. An estimate of the average amount of time needed for a given occupancy might be established, but under no conditions should an effort be made to limit the inspection to that figure. The OSFM DFP, currently depending upon quantitative approaches to inspector evaluation, needs to take a lesson relative to this material and begin to develop a QCP that moves away from quotas and strictly quantitative measures and towards improving the level of the work that is done rather than reaching artificially determined target numbers.

A surprising story was exposed as this research was being concluded. The *Florida Times-Union* newspaper ran a front-page investigative article concerning the Jacksonville, Florida Fire Department's fire prevention activity (Patterson and Pinkham, 2001). The story was not flattering to the fire department. It claimed that the fire prevention division of the department was in disarray. The authors, part of the newspaper's investigative reporting team, claimed that they secretly followed fire prevention inspectors for four months to record their work habits. The investigators conducted 80 hours of surveillance on various city fire prevention inspectors and found that only 38 percent of their work time was spent on city-related business. The paper also quoted a past supervisor of inspectors, Captain Danny Butcher, as saying that "fire prevention is full of incompetent and lazy people."

Surprisingly, Jacksonville was one of the cities that was surveyed by the author for this research. The city was among the minority of respondents that indicated a QCP was in place for code enforcement services. Compared with other respondents, Jacksonville would be considered one of the veteran departments in applying a QCP, as they indicated that their quality-monitoring program had been in effect for 5 years. This was obviously a "breaking story" in Jacksonville at the time of this research. However, it certainly suggests that even proactive departments that have QCPs in place, need to revisit those programs, possibly re-tailor them to current needs and practices, and ensure that they exist more than in name only.

RECOMMENDATIONS

Based upon this research the following recommendations are made

The OSFM must change the focus of the DFP's code enforcement program from quantitatively judging inspector performance based upon the number of inspections completed to an emphasis on customer service and quality of the inspection results. An immediate change should be made in the methods used to credit the work of fire prevention inspectors. Specifically, the current system of requiring an inspector to perform four inspections per day should be replaced with an objective method of crediting an inspector's work based upon size of the occupancy, intricacies of the code or rules being enforced, length of travel to the inspection site, necessary explanatory meetings with owners or managers, and most importantly, the accuracy of the work.

The opinion and satisfaction of the DFP's customers (i.e., inspected property owners and other state agencies that utilize the DFP's inspection services) should be regularly obtained. This could be done through random customer surveys or follow-up interviews by supervisory staff.

A QCP must be developed by a joint-committee that includes labor and management. Fire prevention inspectors who will live with the QCP must be allowed to assist in the formulation of the program. At the same time, the importance of quality performance needs to be emphasized with management of the DFP to ensure its acceptance and success. This requires establishment of a QCP and then unceasing commitment to it. Such commitment is demonstrated by reference to the quality commitment in speeches by the Fire Marshal and other executive level employees, literal inclusion of the word "quality" in the mission statement of the OSFM, development of a quality "catch phrase" that is ingrained in the workforce and eventually recognized by the inspected public (e.g., "At Ford, quality is Job #1"), and repetitive reference to the quality of work at every DFP training seminar, meeting, or other activity.

The OSFM must reengineer the DFP's goals and objectives vis-à-vis the state's Office of Statewide Performance Review. The system needs adjustment to be more proactive towards creating quality-ensuring programs (outcomes) rather than reactive in judging performance (outputs). Administrators of the DFP need to realize that the true mission of the OSFM is protecting lives and property, not simply performing a predetermined number of inspections. The DFP's operations should be benchmarked against those of successful code enforcement agencies (with that success being indicated by a reduction in fire deaths, fire injuries, and property loss as opposed to the number of completed inspections).

The DFP should consider developing inspection "specialists" who would handle particularly complicated or unique inspections on a statewide basis rather than having the geographically located inspector make such inspections in their assigned territory. Examples would include the inspection of state correctional facilities, telecommunications offices, portable fire extinguisher servicing companies, and permanently moored vessels. Such inspections are infrequent in an inspector's regularly assigned territory and often involve complicated or specialized code requirements. The use of a specialist who concentrates solely on the inspection of these occupancies would increase the quality of the service being delivered at such facilities while also allowing the geographically assigned inspectors to concentrate on other occupancies in their territory--thus allowing them to be more familiar with their work.

The DFP should consider continued modification of the types of occupancies that are being inspected. The current system which emphasizes a pre-determined quantity of inspections being completed needs to be replaced by a program that stresses the quality of the inspections being conducted relative to Illinois' fire problems. Code enforcement inspections should be concentrated in those occupancy classifications where rates of fire, fire injuries, and fire deaths are high, or increasing. Specifically, code enforcement inspections should be increased in residential board and care, hotel and motel, and multi-family dwelling occupancies.

A reward system needs to be developed for DFP inspectors and supervisors. If resulting from performance in a program that is developed with the input of inspectors, a reward would have real meaning to the workforce. The system of rewards might have to be collectively bargained, however, it could include paid time off, financial bonuses, choice of assignments, or credit toward future promotions.

A system must be developed to randomly review the field inspections and submitted reports of fire prevention inspectors. Remembering that what gets measured--gets done, inspectors should be made acutely aware that their work is subject to random review. Such a system contrasts with current methods of inspection control that simply count inspection paperwork in regional offices without supervisors accompanying inspectors on occupancy inspections or truly examining reports for quality of the work. DFP training activities subsequently should be developed to concentrate on inspection activity that is indicated to be below-expectations as the result of this examination program.

The OSFM should consider the formulation of a committee to investigate following ISO 9000 guidelines for quality service performance certification and recognition. The research indicated that public agencies are eligible for, and in-fact have obtained, ISO 9000 series standard certification. The program offers an objective third-party evaluation of an agency's operations to judge quality compared to established, time-proven standards that have ensured quality performance in other organizations.

The OSFM DFP needs to change the mindset of the fire service community in Illinois that the job of an OSFM fire prevention inspector is reserved for a retired or disabled member of the Illinois fire service, unless they are qualified. Hiring career-oriented personnel with backgrounds in code enforcement, public education, or fire prevention bureau management experience would result in entry level training being taken to a new level--one where QCP

methodology could be incorporated into the new employees (as opposed to the rudimentary code application training that must be furnished under current practices).

The DFP should continue pursuit of adoption of the 2000 NFPA *LSC* to replace the currently applicable 1985 and 1991 editions of the *LSC* and their respective Illinois-developed modifications. Adherence to the latest published edition of the *LSC* will enhance education and interpretation opportunities from the NFPA and private vendors. Also, it will effectively reduce the code content for which DFP inspectors are responsible by replacing two editions of the *LSC* with one edition.

Finally, based on the survey results of this research, the OSFM and the U.S. fire service in-general need to move from rhetoric to action relative to QCP development and application. The literature review resulted in numerous sources touting the generalized benefits of quality code enforcement and service delivery. However, the research surveys indicated that extremely few fire service code enforcement organizations have actually instituted quality programs in their agencies.

Format changes have been made to facilitate reproduction. While these research projects have been selected as outstanding, other NFA EFOP and APA format, style, and procedural issues may exist.

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Appendix A--Applicable Illinois Fire Safety Laws, Rules, and Codes

Occupancy classification or facility type	Applicable standards
Aboveground liquid storage tanks	Title 41 IAC 160 <i>"Storage, Transportation, Sale and Use of Gasoline and Volatile Oils: Rules and Regulations Relating to General Storage"</i> and Title 41 IAC 180 <i>"Storage, Transportation, Sale and Use of Gasoline and Volatile Oils"</i>
Ambulatory health care centers	NFPA LSC (1985 & 1991 editions)
Business offices	NFPA LSC (1985 & 1991 editions)
Day care centers (adult and child)	NFPA LSC (1985 & 1991 editions) with Illinois modifications
Day care homes (adult and child)	NFPA LSC (1985 & 1991 editions) with Illinois modifications
Educational facilities	NFPA LSC (1985 & 1991 editions)
Hospitals	NFPA LSC (1985 & 1991 editions)
Hotels and motels	NFPA LSC (1985 & 1991 editions)
Industrial	NFPA LSC (1985 & 1991 editions)
Liquefied petroleum gas tank installations	Title 41 IAC 200 <i>"Storage, Transportation, Sale and Use of Liquefied Petroleum Gas"</i> that adopts NFPA Standard 58 <i>"The LP-Gas Code"</i>
Mercantile	NFPA LSC (1985 & 1991 editions)
Nursing homes	NFPA LSC (1985 & 1991 editions)

table continues

Occupancy classification or facility type	Applicable standards
Parimutuel horse racing tracks	Title 41 IAC 150 " <i>Race Track Rules for Fire Safety</i> "
Permanently moored vessels	Title 41 IAC 100 " <i>Permanently Moored Vessel Rules</i> "
Prisons	NFPA LSC (1991 edition)
Residential board and care homes	NFPA LSC (1985 & 1991 editions)
Self-service gasoline stations	Title 41 IAC 170 " <i>Storage, Transportation, Sale and Use of Petroleum and Other Regulated Substances</i> "
State and county fairs	NFPA LSC, NFPA Standard 102 <i>Grandstands, Folding and Telescopic Seating, Tents and Membrane Structures</i> , and cooperative agreement rules between the OSFM and the Illinois Department of Agriculture
Storage	NFPA LSC (1985 & 1991 editions)
Telecommunications switching offices	Title 83 IAC Chapter I, Subchapter f, Part 785 " <i>Joint Rules of the Illinois Commerce Commission, the Office of the State Fire Marshal, and the Illinois Emergency Management Agency: Fire Protection and Emergency Services for Telecommunications Facilities</i> "
Unattended self-service gasoline stations	Title 41 IAC 170 " <i>Storage, Transportation, Sale and Use of Petroleum and Other Regulated Substances</i> "

Note. Information from Division of Fire Prevention *Policy and Procedures Manual* (OSFM, 1999). Chicago, IL. (pp. 6-1--6-10). NFPA LSC is the National Fire Protection Association's *Life Safety Code*. IAC is Illinois Administrative Code.

Appendix B--2000 OSFM Inspections by Occupancy Classification

Occupancy or facility classification	Inspections
Aboveground Bulk Liquid Storage Tanks	737
Aboveground Fuel Dispensing Storage Tanks	747
Adult Day Care Centers	113
Business Offices ^a	644
Child Day Care Centers	3,556
Educational Facilities ^b	1,103
Group and Family Day Care Homes	188
Horse Racing Tracks	255
Hospitals	13
Hotels and Motels	1,075
Industrial	22
Liquefied Petroleum Gas Tanks	269
Nursing Homes	17
Prisons	945
Public Assembly Facilities	206
Residential Buildings ^c	979
Residential Board & Care Homes	2,159
Self Service Gasoline Stations	2,298
State/County Fairs	4,694
Storage Facilities	3

table continues

Occupancy or facility classification	Inspections
Telecommunications Offices	57
Unattended Self-Service Gasoline Stations	92
Total	20,172

Note. Data from *2000 Division of Fire Prevention Annual Activity Report* (OSFM, 2001b). Adapted with permission of OSFM.

a = Business offices inspected are primarily adult vocational schools that under *LSC* classifications are designated as businesses rather than educational occupancies. b= Educational facilities include private educational occupancies but does not include any Illinois public elementary or secondary schools. c = Residential building inspections result from requests from the Illinois Department of Human Services to inspect community integrated program locations. In accordance with *LSC* classifications, if such facilities are occupied by three or fewer residents, they are classified as Single- and Two-Family Residential occupancies rather than Residential Board and Care Homes.

Appendix C--Survey of Fire Agencies

Survey of Code Enforcement Agencies Use of Quality Control Programs

State/City: _____ Agency: _____

1. Please describe your jurisdictional area:

- Statewide Countywide Municipality/City Fire Protection District Other

2. Does your agency conduct code enforcement services?

- Yes
 No (Please proceed to end of survey)

Explain/Comment _____

3. What duties relative to code enforcement are performed by your agency?

- Review of construction plans or specifications
 Field inspections to determine code compliance
 Answering of phone inquiries pertaining to code application
 Issuance of written code interpretations
 Product/equipment evaluation
 Other: _____

4. Does your agency use a formal quality control program applicable to the code enforcement program?

- Yes
 No (Please proceed to end of survey)

Explain/Comment _____

5. To which code enforcement duties does your formal quality control program apply?

- Review of construction plans or specifications
 Field inspections to determine code compliance
 Answering of phone inquiries pertaining to code application
 Issuance of written code interpretations
 Product/equipment evaluation
 Other: _____

Explain/Comment: _____

6. Why was your agency's quality control program developed or implemented?

- As the result of complaints from "customers" about your agency's performance
- As the result of your agency's staff recognizing performance problems (but not directly from customer complaints)
- As the result of a proactive program designed to recognize and stifle potential quality problems before they occurred
- As part of your agency's parent governmental unit mandating a quality control program
- Other _____

Explain/Comment: _____

7. How was your agency's quality control program developed?

- By your agency or department to be specifically tailored to code enforcement work
- Copied from another code enforcement agency
- Use of a quality control process used by all departments in your governmental unit
- Use of a generic quality control process (e.g., TQM, Quality Circles, Six Sigma, etc.)
- Other: _____

Explain/Comment: _____

8. How long has your agency employed this quality control program?

- Less than 1 year
- >1 - 3 years
- >3 - 5 years
- >5 - 10 years
- More than 10 years

Explain/Comment: _____

9. Does your agency's quality control program allow you to identify quantifiable improvements in code enforcement work?

- Yes
- No (Please proceed to Question #11)

Explain/Comment: _____

Please continue.....

10. Has your agency realized quantifiable improvements in code enforcement work as the result of your quality control program?

- Yes
- No

Explain/Comment: _____

11. What factors does your agency measure to determine quality? (Check all that apply)

- The number of mistakes made in completing an assigned task
- The time it takes to complete an assigned task
- The number of tasks completed in a predetermined time
- The cost of completing an assigned task
- Customer satisfaction with your agency's work
- Supervisor satisfaction with an employee's task performance
- Employee satisfaction with the results of a task
- Peer review of an employee's work
- Other: _____

Explain/Comment: _____

12. How would you characterize your agency's quality control program

- The quality control program measures the number of errors/mistakes in a process but does not ensure that the mistakes are corrected or that similar future mistakes are not made
- The quality control system serves to identify mistakes and correct them before the activity is finalized but does not ensure that similar future mistakes are not made
- The quality control system identifies mistakes, corrects them before the activity is finalized, and offers methods to ensure the mistake does not recur
- The quality control program does not measure mistakes, but rather concentrates on other factors our agency considers important to quality (e.g., time to complete a task, cost of completing a task, etc.)
- Other: _____

Explain/Comment: _____

Appendix D--Cover Letter for Fire Agency Survey

DATE

NAME

AFFILIATION/POSITION

ADDRESS

CITY, STATE, ZIP

To Whom It May Concern,

I am employed by the Office of the Illinois State Fire Marshal as a fire protection engineer. I am also a student in the National Fire Academy's Executive Fire Officer Program (EFOP). To fulfill a requirement for the completion of the program, as well as supply the Illinois OSFM with necessary information, I am conducting research relative to methods used by state and local fire agencies to assure quality in their delivery of code enforcement services. As part of this effort, **I am requesting your agency's assistance by completing the attached survey form.**

As you will see by examining the survey questions, I am especially interested in determining (a) if your agency conducts code enforcement services; (b) if your agency takes any steps to either measure or assure quality of code enforcement processes (accuracy of code citations, timeliness of processing, etc.); (c) specifically how your agency assures the quality of code enforcement processes (d) whether your agency practices a formalized method of quality assurance (e.g., Total Quality Management, Quality Circles, Continuous Process Improvement, Six Sigma, etc.); (e) if your agency has developed a quality assurance program specifically tailored to code enforcement; and (f) if the application of your quality assurance program has led to quantifiable improvements in code enforcement services.

My purpose, beyond complying with research requirements for the EFO program, is to supply the Office of the Illinois State Fire Marshal with up-to-date and useful information relative to the quality assurance approaches being utilized by other code enforcement agencies. It is the intent of my research to identify a feasible quality assurance program or method for use within the Illinois OSFM's Division of Fire Prevention. Hopefully, the information will also supply an up-to-date summary relative to the application of formalized quality assurance methods amongst the nation's largest public code enforcement agencies.

**To this end, I would appreciate your assistance
in completing the enclosed survey.**

.....over

I have enclosed a **stamped** pre-addressed envelope and I would appreciate it if you would return the enclosed survey to me. If the self-addressed label has in some manner been damaged or removed from the envelope, please return the information to:

Kenneth Wood
Office of the State Fire Marshal
100 West Randolph Street Suite 11-800
Chicago, IL 60601

I appreciate your assistance with this project. If you feel that it would be beneficial to contact me via telephone, fax, or e-mail, those numbers are indicated below.

Respectfully,

Kenneth Wood, P.E.
Fire Protection Engineer
Division of Fire Prevention

Phone: 312/814-3456
Fax: 312/814-3459
e-mail: Kwosfm@aol.com

Appendix E--Follow-up Cover Letter to Survey Non-Respondents

June 8, 2001

NAME
AFFILIATION/POSITION
ADDRESS
CITY, STATE, ZIP

To Whom It May Concern,

In April of this year I forwarded correspondence to your agency that included a survey pertaining to the adoption and application of quality control programs relative to fire prevention enforcement by your agency. As of this date no response has been received. In the event that the original mailing was misplaced, I have enclosed another blank copy of the survey.

As with the original mailing, I have enclosed a stamped, self-addressed envelope for return of the survey. Also, I have also enclosed the original correspondence that explains my work in depth, and offers contact numbers if necessary.

I appreciate your agency's assistance with the matter and look forward to receiving your reply.

If the self-addressed label has in some manner been damaged or removed from the envelope, please return the information to:

Kenneth Wood
Office of the State Fire Marshal
100 West Randolph Street Suite 11-800
Chicago, IL 60601

Respectfully,

Kenneth Wood
Fire Protection Engineer
Division of Fire Prevention

Phone: 312/814-3456
Fax: 312/814-3459
e-mail: Kwosfm@aol.com

Format changes have been made to facilitate reproduction. While these research projects have been selected as outstanding, other NFA EFOP and APA format, style, and procedural issues may exist.

APPENDIX F--Survey Results of Quality Control Program Experience

Table F1

State Fire Agency QCP Experience

State	Does agency conduct code enforcement? ^a	What enforcement duties does agency conduct? ^b	Does agency use a QCP for code enforcement? ^c	Why was the QCP developed? ^d	How was the QCP developed? ^e	How long has agency used the QCP? ^f	Does QCP identify quantifiable improvement? ^g	Have quantifiable improvements been seen? ^h	What factors does agency measure for QCP? ⁱ
Alabama	Y	B,C,D	N						
Alaska	Y	A,B,C,D	N						
Arizona	Y	A,B,C	Y	D	A	B	Y	Y	B,C
Arkansas	Y	A,B,C,D	Y	C	D	A	N		E,F,G,H
California	Y	A,B,C,D,E	N						
Colorado	-	-	-	-	-	-	-	-	-
Connecticut	Y	A,B,C,D	Y	C	A	A	Y	Y	B,C,E,F,H

State	Does agency conduct code enforcement? ^a	What enforcement duties does agency conduct? ^b	Does agency use a QCP for code enforcement? ^c	Why was the QCP developed? ^d	How was the QCP developed? ^e	How long has agency used the QCP? ^f	Does QCP identify quantifiable improvement? ^g	Have quantifiable improvements been seen? ^h	What factors does agency measure for QCP? ⁱ
Delaware	Y	A,B,C,D	N						
Florida	Y	A,B,C,D	N						
Georgia	Y	A,B,C,D,E	N ^k						
Hawaii ^l	Y	A,B,C,D	Y	B	A	D	Y	Y	B,C,F,G
Idaho	Y	A,B,C,D	N						
Illinois	Y	A,B,C,D	N						
Indiana	Y	A,B,C,D	N						
Iowa	Y	A,B,C,D	N						
Kansas	Y	A,B,C,D	N						

State	Does agency conduct code enforcement? ^a	What enforcement duties does agency conduct? ^b	Does agency use a QCP for code enforcement? ^c	Why was the QCP developed? ^d	How was the QCP developed? ^e	How long has agency used the QCP? ^f	Does QCP identify quantifiable improvement? ^g	Have quantifiable improvements been seen? ^h	What factors does agency measure for QCP? ⁱ
Kentucky	-	-	-	-	-	-	-	-	-
Louisiana	Y	A,B,C,D,E	Y	C	A	B	Y	Y	A,B,C,E,F
Maine	Y	A,B,C	N						
Maryland	Y	A,B,C,D,E	N ^m						
Massachusetts	Y	A,B,C,D	N						
Michigan	Y	A,B,C,D,E	N ⁿ						
Minnesota	Y	B,C,D,O ^o	N						
Mississippi	Y	A,B,C,D	N						
Missouri	-	-	-	-	-	-	-	-	-
Montana	Y	A,B,C,D,E	N						

State	Does agency conduct code enforcement? ^a	What enforcement duties does agency conduct? ^b	Does agency use a QCP for code enforcement? ^c	Why was the QCP developed? ^d	How was the QCP developed? ^e	How long has agency used the QCP? ^f	Does QCP identify quantifiable improvement? ^g	Have quantifiable improvements been seen? ^h	What factors does agency measure for QCP? ⁱ
Nebraska	Y	A,B,C,D	N ^p						
Nevada	-	-	-	-	-	-	-	-	-
New Hampshire	Y	A,B,C	N						
New Jersey	Y	B,C,D	N						
New Mexico	Y	A,B,C,D,E	N ^q						
New York	Y	B	N						
North Carolina	Y	A,C,D	N						
North Dakota	Y	A,B,C	N						
Ohio	Y	B,C	N						
Oklahoma	Y	A,B,C,D	N						

State	Does agency conduct code enforcement? ^a	What enforcement duties does agency conduct? ^b	Does agency use a QCP for code enforcement? ^c	Why was the QCP developed? ^d	How was the QCP developed? ^e	How long has agency used the QCP? ^f	Does QCP identify quantifiable improvement? ^g	Have quantifiable improvements been seen? ^h	What factors does agency measure for QCP? ⁱ
Oregon	Y	B,C,D	N						
Pennsylvania	N								
Rhode Island	-	-	-	-	-	-	-	-	-
South Carolina	Y	A,B,C	N						
South Dakota	Y	A,B,C	N						
Tennessee	Y	A,B,C,D	N						
Texas	Y	A,B,C,D	Y	B,C	A	C	Y	Y	E
Utah	Y	A,B,C	N						
Vermont	Y	A,B,C,D,E	Y ^r	C	-	A	UNK	- ^s	C,D,E
Virginia	Y	A,B,C,D	N						

improvement?": Y = Yes, N = No. h = In reference to column 9 "Have quantifiable improvements been seen?": Y = Yes, N = No. In reference to column 10 "What factors does agency measure for QCP?": A = The number of mistakes made in completing an assigned task, B = The time it takes to complete an assigned task, C = The number of tasks completed in a predetermined period, D = The cost of completing a task, E = Customer satisfaction with the agency's work, F = Supervisor satisfaction with an employee's performance, G = Employee satisfaction with the results of a task, H = Peer review of an employee's work, O = Other. j. In reference to column 11 "Characterize the agency's QCP?": A = The quality control process measures the number of mistakes or errors in the process, B = The quality control process serves to identify mistakes and corrects them before the activity is finalized but does not ensure that similar future mistakes are not made, C = The quality control process identifies mistakes, corrects them before the activity is finalized, and offers methods to ensure the mistake does not recur, D = The quality control process does not measure mistakes but rather concentrates on other factors the agency considers important, O = Other. k. Georgia indicated that no formal quality control program is implemented through random review of letters, review of all interpretations, and plan review by inspection personnel. Inspection personnel quality is assured by review of inspection reports. l. Hawaii's survey was completed by the Fire Department, which serves 73.3% of the state's population. There is no formal state fire agency in Hawaii. m. Maryland has a supervisory review of plan review and inspections but not a formal quality control program. n. Michigan employees conduct customer surveys to judge how the agency is serving the needs of customers and then evaluates for program improvement. o. Minnesota indicated that the agency also performs review of sprinkler systems and aboveground storage tanks. p. Nebraska indicated that quality control is based on supervisory practices of report review and accompanying staff on inspections. q. New Mexico indicated that the agency plans to have a quality control program in the near future. r. Vermont indicated that the agency is getting started in quality review; the first steps will include an operations manual and audit of reports and correspondence. s. Vermont indicated that results have not been realized yet as the QCP is too new. t. Wyoming indicated that the agency is in the process of developing a computerized inspection, plan review, permits, and complaints program. Part of this effort is to improve control but not to the level of the questions in the survey.

City	Does agency conduct code enforcement? ^a	What enforcement duties does agency conduct? ^b	Does agency use a QCP for code enforcement? ^c	Why was the QCP developed? ^d	How was the QCP developed? ^e	How long has agency used the QCP? ^f	Does QCP identify quantifiable improvement? ^g	Have quantifiable improvements been seen? ^h	What factors does agency measure for QCP? ⁱ
Denver, CO	-	-	-	-	-	-	-	-	-
Detroit, MI	-	-	-	-	-	-	-	-	-
El Paso, TX	-	-	-	-	-	-	-	-	-
Fort Worth, TX	Y	A,B,C	N						
Houston, TX	Y	A,B,C,D,E	Y	B,C,D	A	A	Y	N ^h	B,C,F,
Indianapolis, IN	Y	A,B,C,D	N						
Jacksonville, FL	Y	A,B,C,D,E	Y	D	C,D	C	Y	Y	C,E,F,
Los Angeles, CA	Y	A,B,C,D,E	Y	A,B,C,	A,B	B	Y	Y	B,C,D
Memphis, TN	-	-	-	-	-	-	-	-	-
Milwaukee, WI	Y	A,B,C,D	N						
Nashville, TN	Y	A,B,C,D	N						

City	Does agency conduct code enforcement? ^a	What enforcement duties does agency conduct? ^b	Does agency use a QCP for code enforcement? ^c	Why was the QCP developed? ^d	How was the QCP developed? ^e	How long has agency used the QCP? ^f	Does QCP identify quantifiable improvement? ^g	Have quantifiable improvements been seen? ^h	What factors does agency measure for QCP? ⁱ
New York, NY	Y	B,C,D,E	N ^o						
Okla. City OK	Y	A,B,C,E	N ^p						
Philadelphia, PA	Y	A,B,C,D,E	N						
Phoenix, AZ	Y	A,B,C,D	N						
Portland, OR	Y	A,B,C,D	Y ^q	C	A	C	Y	Y ^r	A,C,E
San Antonio, TX	-	-	-	-	-	-	-	-	-
San Diego, CA	Y	B,C	Y	C	A	E	Y	Y	C,E
San Fran., CA	Y	A,B,C,D	N ^s						
San Jose, CA	-	-	-	-	-	-	-	-	-
Seattle, WA	Y	A,B,C	N						
Washington DC	Y	B,C,D	Y	A,B,C	A	B	Y	-	A,B,C

Note. All data from 2001 survey of municipal fire authorities by author. A "-" represents unreported data. Blank represent data that is not applicable. "UNK" represents the respondent indicated that the answer was unknown to them.

a = In reference to column 2 "Does agency conduct code enforcement?": Y = Yes, N = No. b = In reference to column 3 "What enforcement duties does agency conduct": A = Review of construction plans or specifications, B = Field inspections to determine code compliance, C = Answering phone inquiries pertaining to code application, D = Issuance of written code interpretations, E = Product or equipment evaluation, O = Other. c = In reference to column 4 "Does agency use a QCP for code enforcement?": Y = Yes, N = No. d = In reference to column 5 "Why was the QCP developed?": A = As the result of customer complaints about agency's performance, B = As the result of agency's staff recognizing performance problems, C = As the result of a proactive program to recognize and stifle potential quality problems before they occur, D = As part of the agency's parent governmental unit mandating a quality control process, O = Other. e = In reference to column 6 "How was the QCP developed?": A = By your agency or department to be specifically tailored to code enforcement work, B = Copied from another code enforcement agency, C = Use of a quality control process used by all departments in your governmental unit, D = Use of a generic quality control process, O = Other. f = In reference to column 7 "How long has the agency used the QCP?": A = Less than 1 year, B = 1 - 3 years, C = >3 - 5 years, D = >5 - 10 years, E = More than 10 years. g = In reference to column 8 "Does the QCP identify quantifiable quality improvements?": Y = Yes, N = No. h = In reference to column 9 "Have quantifiable improvements been seen?": Y = Yes, N = No. i = In reference to column 10 "What factors does agency measure for QCP?": A = The number of mistakes made in completing an assigned task, B = The time it takes to complete an assigned task, C = The number of tasks completed in a predetermined period, D = The cost of completing a task, E = Customer satisfaction with the agency's work, F = Supervisor satisfaction with an employee's performance, G = Employee satisfaction with the results of a task, H = Peer review of an employee's work, O = Other. j = In reference to column 11 "Characterize the agency's QCP?": A = The quality control process measures the number of mistakes or errors in a process, B = The quality control process serves to identify mistakes and corrects them before the activity is finalized but does not ensure that similar future mistakes are not made, C = The quality control process identifies mistakes, corrects them before the activity is finalized, and offers methods to ensure the mistake does not reoccur, D = The quality control process does not measure mistakes but rather concentrates on other factors the agency considers important, O = Other. k. Charlotte did not answer this question. l. The only check is supervisors randomly stopping at sites to field audit inspections. m. Cleveland indicated that labor market quality control is achieved through several review processes and the chain of command. n. Dallas also conducts acceptance testing for fire alarm and fire suppression systems. o. Houston answered "no" because the program has not been established long enough to establish a track record. p. New York indicated that a formal quality control program is not in place but the inspection process is subject to oversight in broad accordance to total quality management. q. Oklahoma City's response stated that a quality control program is not in place now. A formal program would be a great benefit to ensure consistency. r. Portland uses a combination of peer review, and random ride-alongs by supervisors. s. Portland indicated an increased number of inspections and reduction in the number of customer complaints. t. San Francisco indicated that forms are now in the process of development.

City	Does agency conduct code enforcement?	What enforcement duties does agency conduct?	Does agency use a QCP for code enforcement?	Why was the QCP developed?	How was the QCP developed?	How long has agency used the QCP?	Does QCP identify quantifiable improvement?	Have quantifiable improvements been seen?	What factors does agency measure for QCP?
Brentwood, TN	Y	B,C	N						
Color. Springs CO	-	-	-	-	-	-	-	-	-
Corpus Christi, TX	-	-	-	-	-	-	-	-	-
Dayton, OH	Y	A,B,C	N						
Fairfax, VA	Y	A,B,C,D	Y	C	A	A	Y	Y	B,C,
Glendale, AZ	Y	A,B,C,D	N						
Howell, MI	Y	A,B,C,D	N						
Irving, TX	Y	A,B,C,D,E	N						
Los Angeles Co.	Y	A,B,C,D	N						
Mentor, OH	-	-	-	-	-	-	-	-	-

City	Does agency conduct code enforcement?	What enforcement duties does agency conduct?	Does agency use a QCP for code enforcement?	Why was the QCP developed?	How was the QCP developed?	How long has agency used the QCP?	Does QCP identify quantifiable improvement?	Have quantifiable improvements been seen?	What factors does agency measure for QCP?
Mercer Island, WA	Y		Y	C	A,B,D	B	Y	Y	B,C,
Midland, TX	Y	A,B,C,D	N						
Naperville, IL	Y	A,B,C,D	Y	A,B,C,D	A	C	Y	Y	B,E,
Norfolk, VA	Y	A,B,C,D	Y	C	A	E	Y	Y	E,F
Orlando, FL	-	-	-	-	-	-	-	-	-
Portsmouth VA	Y	C,D	N						
Providence, RI	Y	A,B,C,D	N						
Rockford, IL	Y	A,B,C,D	N						
Sierra Vista, AZ	Y	A,B,C,D	Y	D	C	B	Y	Y	D,E,
Swansea, MA	Y	A,B,C	N						

