

GLOBAL QUALITY STANDARDS AND PEST MANAGEMENT SERVICE

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Abstract Increased global connectivity, integration and interdependence in the economic, social, technological, cultural, political and ecological spheres have created special challenges for the pest management service industry: meeting customer needs while remaining economically competitive. While automated processes can make an impact, pest management service industry is still labor-intensive, and there can be no substitute for high-quality personal interaction between service employees and customers. Competitive advantage rests with those organizations that successfully provide customer value through the most efficient use of quality tools, technology and people. In order to apply quality tools a pest management service company, first start recognizing differences between service and manufacturing processes and challenges within the service processes, second understand Quality Management System and identify key processes. As businesses become more globalized, a pest management company who intends to or is providing services to multinational companies and their local partners, also needs to demonstrate that their pest control policies and processes are defined on parameters of consistency and verifiable procedures, and are in compliance with requirements of international standards such as ISO 9001:2000 Quality Standards, ISO 14001:2004 Environmental Management Standards, OSHAS 18001:1999 Occupational Health Safety Standards, ISO 22000 Food Safety Standards and other local, regional or international requirements such as HACCP.

Key Words Integrated Pest Management, IPM, Urban Pest Control, Structural Pest Management

INTRODUCTION

Pest management is critical in the food processing and handling, food service, food retail, hospitality, health care and other facilities where we live, work and play. Both in-house and contracted pest control services primarily involve use of pesticides to manage pests in urban, non-production agriculture and agricultural environments. A variety of local, national and international regulations and standards govern pesticide registration, production, sale, and handling and use to protect human and environmental health concerns. A number of issues surfaced, in the 1960's, posing alarming questions about the human and environmental risks associated with pesticides. The nonpoint source pesticide pollution comes from many diffuse sources. People can be exposed to excessive pesticide levels while working; via food, soil, water or air, or by directly ingesting pesticide products. The U.S. Centers for Disease Control and Prevention has documented environmental chemical exposures including several pesticides in its National Report on Human Exposure to Environmental Chemicals. The US Environmental Protection Agency estimates that 10,000-20,000 physician-diagnosed pesticide poisonings occur each year among the approximately 3,380,000 U.S. agricultural workers.

Most consumers, government and private established their own written policies for pest control services to address these risks. Although these personalized customer's written policies presented challenges for pest control operators, the real challenges are those policies and rules of endless number of local, national and international agencies that are constantly preparing new rules or revising those already in existence. Increased global connectivity, integration and interdependence in the economic, social, technological, cultural, political and ecological spheres has further complicated the issue of compliance to serve the global customer and have created special challenges for the pest management service industry: meeting customer needs while remaining economically competitive.

In this non-research article, we have three main objectives. First, we attempt to provide historical perspective on national (USA) and international regulations and industry initiatives towards self governance

through adoption of written policies, procedures and standards related to changing requirements of pest control services. Second, a need of integrating/aligning pest control service management processes with global quality management systems standards to provide specific, measurable results with emphasis on service quality and customer satisfaction. Third, a discussion on what Quality tools can assist pest management industry in meeting these changing customer needs.

This discussion includes both standards and guidelines. It is important to distinguish between standards and guidelines because each term has different legal implications. Standard is required procedure that probably reflects a legal duty or obligation for standard of practice. Guideline is a recommended operating procedure formulated and developed to further enhance the quality of services provided. Guidelines are not intended to be standards of practice or to give rise to legally defined duties of service; but in certain circumstances they could assist in evaluating and improving services rendered.

HISTORICAL PERSPECTIVE

Guidelines to Deliver Structural Pest Control Services and Service Performance Systems In 1979, a US Presidential Memorandum directed the heads of 10 major US federal agencies to “support and adopt Integrated Pest Management (IPM) strategies...” (Carter, 1979). During the next decade, several agencies adopted formal IPM policies for properties under their stewardship⁶, although it was not until 1996 that US Congress passed a law defining IPM in general terms and unequivocally requiring federal agencies to use and promote the process (Food Quality Protection Act 1996). In early 1980s, a set of standards known as Gold Medal Standards of Pest Management, were also developed by a pioneer company PCO Pest Control of Canada, primarily focused on the food processing industry. The Gold Medal Program was one of the first ever pest control program with documented code of conduct, policy and procedures known as “Gold Medal Standards”, quality assurance and compliance. This self governed, audited and quality assured program was later expanded to other commercial and industrial segments. It was implemented in Office of General Services managed buildings in the State of New York institutions in late 80s. This new approach to pest control by State of New York, Office of General Services also resulted in development of guidelines on how to deliver IPM services, known as Modern Pest Control Techniques Handbook. This monograph discusses IPM techniques and contracting for IPM services, guidelines for those who hire and oversee pest management contractors. Later, the trend for contracting for “pest control services through IPM” was followed by several states, counties (e.g. City and County of San Francisco 1996, Santa Clara County 2002, USA) and municipal institutions, and also filtered throughout the mainstream including schools, office complexes, hospitals, correctional institutions and other facilities including private sector.

Increased consumers concerns over pesticide use have also led to the further development of various guidelines and protocols, often known as Standards to deliver quality that can be measured and quantified. With the passage of the US Government Performance and Results Act (GPRA) of 1993, the federal management is now held accountable to demonstrate specific, measurable results, with an emphasis on service quality and customer satisfaction. In the private sector, the Gold Medal Program of PCO Pest Control Services of Canada (Orkin) provided the leadership in measured performance. It was the first pest management program in North America or Europe to be registered in 1994 under ISO 9001 Quality Management System, a third party audited program, with emphasis on measurable service quality and customer satisfaction. Later, the ISO 9001 registration was followed by several other pest control companies around the world.

Guidelines to Provide Pest Control Services in Food Processing Industry in USA

In the food processing and handling, pharmaceutical, medical and other industries, the audit agencies such as American Institute of Baking, American Sanitation Institute (AIB), NSF International - Cook and Thurber etc., concerned with compliance to various industry specific Good Manufacturing Practices, pesticide residues in products and other product contamination risks caused by pest control worker’s activities while working in a production environment, also developed guidelines or standards on how to deliver a pest control service, worker training and documentation . They use these guidelines as a part of conducting product

safety audits and compliance. AIB International published standards that detail the various components for developing a comprehensive food safety and hygiene program for variety of food and non-food industry and are the basis for an AIB audit. In USA the National Restaurant Association Educational Foundation developed the ServeSafe food safety training program in compliance with each State food safety training requirement and required all restaurant owners, workers and contractors including pest control workers who service restaurants to undergo such training.

This variety of local and national standards and protocols developed by various government and non-government agencies, created a great deal of confusion among the pest control companies and various auditing agencies across the globe. In order to avoid confusion among various standards, the National Pest Management Association, USA, working along with the various third party food safety auditing companies and pest management firms consolidated the pest control services standards specific to food processing plants. They agreed and developed minimum operational criteria also known as Pest Management Standards for Food Plants, to provide consistency in service.

Guidelines and Standards for Export Wood Packaging Material Fumigation

Wood packaging material made of unprocessed raw wood is also a pathway for the introduction and spread of pests in global trade. The International Standards for Phytosanitary Measures Publication No. 15 (ISPM) — Guidelines for regulating wood packaging material in international trade, is the guiding document for each organization to make their WPM suitable for international shipment. Their facilities are required to be certified (i.e. pallet manufacturing or recycling, pest control, cargo forwarding, export brokerage) by an inspection agency. These agencies provide inspection and auditing services to certify facilities that they are in compliance with the ISPM 15 standards. Pest control companies, those, who provide wood fumigation services to their global customers, also have to comply with these standards.

Quality Assured Guidelines and Standards in Structural Pest Control Industry

At the onset of 21st century two other models of pest management guidelines also emerged in the USA at the regional and national level. One, the QualityPro Guidelines developed by the National Pest Management Association, USA, an industry program designed to increase professionalism of the industry, customer satisfaction through self-regulation. Second, EcoWise Certified Standards for IPM Certification in Structural Pest Management, by EcoWise.org and Green Shield Certified pest management professional services and service providers and Green Shield Certified, are the examples based on the principles of Integrated Pest Management. The primary focus of these standards is to certify service businesses and their employees who provide the services in structures on the principle of Integrated Pest Management thus assuring specific and measurable results, with an emphasis on service quality, customer satisfaction and protection of human and environmental health.

INTEGRATING QUALITY MANAGEMENT SYSTEMS IN PEST CONTROL

Global Trade — Traceability

World trade expansion has raised the issue of the relationship between trade and quality in terms of human health and the environment at a higher level. The production of goods that are imported and exported, like other production, will often have human and environmental health effects. Health and safety issues arising in trade are not always easily resolved at either the domestic or international levels. This includes services provided by pest control industry which has also come under increased scrutiny in order to assure that their activities are traceable from point or non-point source, ensuring that it doesn't cause cross-contamination resulting in human and environmental health concerns. For example, domestic regulations that prohibit the sale of a toxic pesticide, do not apply internationally. Goods that are restricted in domestic markets, on the grounds that they present a danger to human, animal or plant life or health, or to the environment, may often be legally exported. This may cause a problem for the importing country, where information is lacking on whether and why the product is banned.

Outsourcing of Pest Control Services and Global Partnership

Besides the expansion of world trade, another factor that has influenced quality of pest control service is the market for contracted and outsourced services that has also grown significantly in the last 20 years. This growth was driven by the realization that third-party 'contract services' firm can readily undertake the management and provision of routine operations providing better services and at a lower cost than when these operations are managed internally. By outsourcing, these organizations are no longer in control of quality of the service they acquired, thus have to rely on a quality management system that has an auditing process to ensure delivery of service in the manner and standards it is being asked for.

Pest Control Service — A Service Management System

The pest control service is now no longer only the application of pesticides. It is a service management system that usually incorporates automated systems along with skilled labor. It includes several processes such as sale of product and services, purchasing materials and equipment to deliver services, operating processes of service delivery, inspection, training, corrective and preventive actions, quality assurance and control, data and document maintenance, involvement of various management groups, customer satisfaction and continual improvement. Pest control service management also usually provides services development. For instance, it is extremely important to first simplify and then streamline services into simple workflow. However, managing workflow is not enough, another component is the ability to govern automated controls from a centralized location and make sure that quality control is in effect at all times. All processes, not just pesticide application, must be coordinated across the supply chain to assure a desired quality and customer satisfaction — a pest free environment, while protecting human and environmental health.

Global Quality Standards and Pest Control Service

Many different techniques, concepts and systems have evolved over the last century to improve product or service quality, including Statistical Process Control Concept, Zero Defects, Six Sigma, Malcolm Baldrige National Quality Award, Quality Circles, Total Quality Management, Theory of Constraints, Quality Management Systems and continuous improvement. The Quality Management Systems standards created and maintained by the International Organization for Standardization (ISO) known as ISO 9001 series of standards were initially developed in 1987. These standards continuously improved over years and are internationally accepted standards applicable in different types of industries, based on the type of activity: designing, production or service delivery. ISO does not itself certify organizations. These are administered by accreditation and certification agencies across the globe. ISO 9001 standards do not certify the quality of product or service. ISO 9001 certification is intended to tell purchasers of services that the certificate holder has a quality management system in to deliver consistent products and services, that it conducts periodic internal audits of its system to assure that its key processes are functioning as intended, that it has a system for preventive and corrective actions, for measuring its key processes and for determining customer satisfaction with an eye toward improving overall management systems.

As businesses become more globalized, actions of one organization (in this case delivery of a pest control product or service) in one part of the world have human and environmental health impacts across the globe. We are no longer just governed by local laws but also required to act responsibly through international treaties such as Stockholm Treaty, Rotterdam Treaty, Montreal Protocol, and United Nations Environmental Program — Strategic Approach to International Chemical Management. The pest management companies, who intend to or are providing services to this global market place are required to demonstrate to their customers that their pest control policies and processes are consistent, verifiable and in compliance with requirements of international quality system management standards, and national and international regulations.

Other ISO standards that are applicable to pest control service industry are ISO 22000 (Food Safety Management System), ISO 14001 (Environmental Management System), and OHSAS 18001 (Occupational Health and Safety Assessment Series). ISO 22000 international standards specify the requirements for a food safety management system that involves interactive communication, system management, prerequisite programs, and HACCP (Hazard Analysis Critical Control Point) principles. Recognizing the role of pest

control service organization within the food chain is essential to ensure effective interactive communication throughout the chain in order to deliver safe food products to the final consumer. This communication along the food chain is essential to ensure that all relevant food safety hazards, including pest control hazards are identified and adequately controlled at each step within the food chain. This communication helps organizations upstream and downstream, whichever level they receive the pest control service. ISO 22000 has been aligned with ISO 9001 in order to enhance the compatibility of the two standards. It can be applied independently of other management system standards or integrated with existing management system requirements.

ISO 22000 integrates the principles of HACCP system and application steps developed by the Codex Alimentarius Commission. ISO 22000 requires that all hazards that may reasonably be expected to occur in the food chain, including hazards that may be associated with the type of process and facilities used are identified and assessed. This it provides the means to determine and document why certain identified hazards need to be controlled by a particular organization and why others need not. ISO 14001 environmental management standards that help pest control service organizations minimize how their operations negatively affect the environment (cause adverse changes to air, water, or land), comply with applicable laws, regulations. The overall idea is to establish an organized approach to systematically reduce the impact of the environment aspects which an organization can control.

OHSAS 18001 is an Occupation Health and Safety Assessment Series for health and safety management systems. It is intended to help organizations to control occupational health and safety risks. It was developed in response to widespread demand for a recognized standard against which to be certified and assessed. In case of a pest control service business, the OHSAS management system helps in minimizing risk to employees (pest control workers) and other interested parties who may be exposed to occupational health and safety risks associated with pest control activities.

PEST CONTROL SERVICE AND MANUFACTURING PROCESS

Pest Control Service, a transactional process is different, and has unique needs from traditional manufacturing areas. There is no “product” per se, and usually an “entity” (service) flows through the processes, involves activities in which an item of work is processed, transacted or completed. This entity may change shape, form, and travel across several departments, processes and even replicate itself. Often the processes are loosely defined, and there may be several processes that cross any one individual’s desk. Examples could be anything from opening a new pest control customer account or procuring pest control products for service or training pest control technicians or safe transportation of pesticides etc.

The first challenge a pest control service organization faces is transactional processes that tend to grow in complexity and diversity as the size of an organization grows or multidimensional services or choice of pest control tools and techniques to control one pest species, which differ from one client to other. That is not always true in the manufacturing of a product. As pest control Service Company grows, they also begin to face external customer’s processes (e.g. quality standards, standard operating procedures, protocols, quality audit processes etc.) and also growing internal support processes (e.g. administration, financial reporting, information services, procurement, training, logistics, quality control etc.). Pest control service organizations tend to organize work functionally rather than from an end-to-end process perspective, thus compounding the task of process streamlining.

It is harder to see a transactional process from one end to the other; functional tasks and steps might not even be in one location (several service center locations). Functional hierarchies make it even more complicated and challenging for the process improvement team, because the distances between the customers, sub standard or failed service delivery and operator often are huge leading to huge dissatisfaction from both the customer and the employee who has to resolve the service defect. Data, if pest control companies can even collect them, often are fraught with problems. Frequently, a pest control quality assurance manager is faced with discrete data. Even if they are lucky enough to have continuous data, the data is rarely normally distributed. While several statistical techniques can address these issues (more sophisticated software are gradually entering the market place), getting pest control businesses to see the need to train their employees on how to use them is another challenge.

Pest control workers want to do the right thing, but they sometimes do not have access to current and updated versions of a process that allows them to do it the right way consistently. Failures rarely are created intentionally by systems; more commonly, they are the results of the system design not taking into account the overall view of the process. The second part of this issue is that pest control organizations/management do not always see how a process can be repeatable and in control while allowing for creativity and flexibility.

APPLICATION OF QUALITY IN PEST CONTROL SERVICE INDUSTRY

In the delivery of pest management services the following key processes constitutes a quality management system: **Policy:** A policy is a deliberate plan of action to guide decisions and achieve rational outcome(s). The term may apply to government, private sector, organizations and groups, and individuals. The goals of policy may vary widely according to the organization and the context in which they are made. Broadly policies are typically instituted in order to avoid some negative effect that has been noticed in the organization, or seek some positive benefit. **Process:** is a naturally occurring or designed sequence of changes of properties or attributes of an object or system. **Sales Process,** is one of the key processes that must describe how services are sold, who approved the contracts and provides proper and adequate resources to deliver the service. **Inspection** will show how and when the service is inspected to ensure that the scope or protocol is strictly followed. If not then what is the recourse. **Procedure:** is a specification of series of actions, acts or operations which have to be executed in the same manner in order to obtain always the same results. **Document Control/Quality Records** refers to how data is collected and used in statistical analysis to maximize its effectiveness in the business process improvement. How the document and records are controlled/maintained. **Continuous Improvement** is an ongoing effort to improve products, services or processes. These efforts can seek incremental improvement over time or breakthrough improvement all at once. **Cost of Quality** is a term widely used and widely misunderstood. The “cost of quality” isn’t the price of creating a quality product or service. It’s the cost of not creating quality product or service. **Customer Satisfaction and Surveys:** Organizations of all types and sizes have come to realize that their main focus must be to satisfy their customers. Satisfying the customer includes what is needed when it’s needed. Surveying the customer from time to time is also an effective tool to improve service quality. **Quality Assurance and Quality Control:** The terms “quality assurance” and quality control” are often used interchangeably to refer to ways of ensuring that quality of a service or product. The terms, however, have different meanings. Assurance is the act of giving confidence, the state of being certain or the act of making certain. Quality Assurance is planned and systematic activity implemented in a quality system so that quality requirements for a product or service will be fulfilled. Control is an evaluation to indicate needed corrective responses; the act of guiding a process in which variability is attributable to a constant system of chance causes. Quality control is the observation technique and activities used to fulfill requirements for quality. **Supplier Quality:** Supplier performance is about more than just a low purchase price. The cost of transactions, communication, problem resolution and switching suppliers all impact overall cost. The reliability of supplier delivery, as well as the supplier’s internal policies such as inventory levels all impact supply-chain performance.

QUALITY MANAGEMENT SYSTEM AND TOTAL CUSTOMER SATISFACTION

The following examples describes how application of above mentioned key processes, applied through a quality management systems among partnering organizations (the service provider and customer) provides measurable results with an emphasis on service quality and customer satisfaction. These case studies reflect on the importance of having a quality management system in place to overcome pest management challenges.

Case Study: The Santa Clara County (Customer) and Orkin (Service Provider) Pest Management Partnership: The Santa Clara County’s Structural IPM services are managed by Orkin for the last five years. The performance data over the last five years indicates a steady decline in service related complaints. Out

of 180 plus buildings under this contract serving 16000 plus building occupants, only 7% of the buildings reported recurring pest problems. The buildings with the recurring pest problems are large complexes (e.g. court complex, hospital complex, correctional facility) with inflow of heavy traffic (people & goods) on daily basis. A few other facilities with recurring ant problems are located in sub-urban and rural settings. Timely and informed communication (a key process of QMS) with building occupants helped to raise awareness and diffuse concerns that would have otherwise resulted in recurring demand for pesticide use. The transition to IPM approach also resulted in significant reduction in total pesticide use (95%), as measured by several variables. The number of pesticide products used was also decreased due to the approval process in place. Inspection, reporting, training and communication processes helped department IPM coordinators and facility managers to focus more on preventive strategies. This also helped the organization to invest more in “sustainable building concepts”. This total system approach of IPM combined with Quality Management Systems tools were also recognized by the State of California as IPM Innovator (2005).

CONCLUSION

As multinational organizations and international outsourcing assume central positions in the business world, quality and customer satisfaction strategies and concepts are spreading quickly around the world as well. The growing popularity of methodologies such as international quality management standards demonstrates this growth. Assured quality is becoming the touchstone of competitive strategy, as it creates choices and opportunities not available to an organization’s competitors and creates the ability for an organization to take actions that are literally impossible for its competitors. These global partnerships will continue to demand an assured quality system from their suppliers of products and services including pest control service, thus making it inevitable that the pest control companies who endure quality standards, use quality management systems and demonstrate their willingness to an audited quality assurance process, will reap the benefit from better employee relations, higher productivity, greater customer satisfaction, increased market share, and improved profitability.

The increased global connectivity, integration and interdependence in the economic, social, technological, cultural, political and ecological spheres have also created special challenges for the pest management service industry: meeting customer needs while remaining economically competitive. While automated processes can make an impact, pest management service industry is still labor-intensive, and there can be no substitute for high-quality personal interaction between service employees and customers. Competitive advantage rests with those organizations that successfully follow standards through a documented quality system and provide customer value through the most efficient use of technology and people. Standards ensure desirable characteristics of products and services such as quality, environmental friendliness, safety, efficiency and interchangeability — and at an economical cost.

Quality must be implemented systematically and strategically throughout the pest control organization—from the top down in all processes administrative, technical, sales, marketing and delivery. Not all systems and standards can be transplanted from country to country without some adjustments; however, pest control service industry should endure these challenges to the global progress of quality, assuring that their activities are traceable from point or non-point source, and it doesn’t cause cross-contamination resulting in human and environmental health concerns.

Customer Satisfaction Survey: The following customer surveys indicate how customers responded to total customer satisfaction based on key quality tools, when partnered with a pest control supplier (Orkin), who had a Quality Management System in place. Case Studies (2004-2006)							
Key Processes	Policy	Process (Sales, Inspection etc.)	Procedure	Document Control/ Quality Records	Continuous Improvement	Cost of Quality	Quality Assurance / control / Supplier Quality
Customer Surveyed							
AgraWest, USA	X				X		X
Ample Industries, USA	X						
Barona Valley Ranch Resort, USA	X	X	X		X		X
Fruit Growers Supply Company, USA	X	X		X			X
Ganong Bros. Ltd, Canada		X	X	X	X		X
Glens Falls Hospital, USA	X	X	X				X
Golden Cheese Company of California, USA	X	X	X	X	X		X
GoodHeart Brands, USA	X	X	X	X	X	X	X
High Liner Foods, Canada	X	X		X	X		X
Knouse Foods, USA	X	X		X	X		X
Mims Meat Company, USA	X	X	X				
Monsanto Company, USA	X			X	X		X
Piedmont Hospital, USA	X	X	X	X	X		X
Sara Lee, USA	X			X	X		X
Schneider Foods, Canada	X				X		X
Smurfit-MBI, Canada	X	X		X	X		X
Temple-Inland Paperboard and Packaging, USA	X				X		X
The Cheesecake Factory Bakery, USA	X		X				
The Denver Safeway Milk Plant, USA	X	X		X	X		X
Tree of Life , USA	X	X		X			X
Westland/Hallmark Meat, USA	X				X		X

The data represents a variety of customers such as food plants, packaging, and hospitals. All customers indicated "total customer satisfaction". The response to various Quality Tools indicates - a pest control service (pest free environment) is a result of a "Quality Management System", where quality can be measured through varying "customer requirements", not just pest control by use of pesticides. All customer surveys indicate that they partnered into this "Gold Medal Pest Management" approach based on the "Policy" that demonstrates a pest free environment while addressing human and environmental concerns.

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