

THE U.S. BUILDING MAINTENANCE SERVICES INDUSTRY: NATIONAL TRENDS AND CHARACTERISTICS

An Initial Report of the Center for Competitive Analysis

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Introduction

This report from the Center for Competitive Analysis (CCA) of the University of Missouri provides basic background information about the Building Cleaning and Maintenance Services (BMS) industry. This introductory section provides an overview of the industry.

The BMS industry is classified under SIC code 7349.¹ Firms in the industry offer a wide variety of services, typically including vacuuming, dusting, emptying trashcans, and cleaning restrooms. Some businesses may provide additional services such as painting, light carpentry, and replenishing bathroom supplies. This SIC classification does not include carpet and upholstery cleaning services. According to U.S. Census data for SIC code 7349, in 1992 there were 47,349 establishments nationally with a total of \$15.3 billion in sales, or an average of about \$322,420 per establishment. The 1992 average sales per establishment for the fifty largest (by sales) firms, which had a total of 1,161 establishments, was \$3.57 million. The fifty largest firms, therefore, maintained establishments that were approximately ten times larger on average than the industry as a whole. The total number of paid employees in March 1992 was 747,399. Data from the 1997 Economic Census are not yet available.

Data for the third quarter of 1998² reveal that the national total of businesses (comparable to the Census “establishments”) in this industry had grown to 68,206, with a total of 759,849 employees. Industry revenues had grown to approximately \$20.3 billion, while revenues per business fell slightly to \$297,627. It is likely that these figures are influenced by the strong economy of the 1990s along with the push for controlling costs in business firms. The combination of these two factors would lead to more outside contracting for cleaning services and would also increase the incentive for starting new small cleaning businesses. The national average weekly earnings in the industry were relatively low at \$216.07 in 1998, which represents only an 8.4% increase over 1994 earnings.³ Using a broader definition of this labor market, including other related 4-digit SIC code industries, BLS data show that in 1996 the United States had 3.6 million cleaning and maintenance workers, less than 4% of whom belonged to unions.

¹SIC code 7349 is split into two pieces under the new NAICS classifications. “Lighting Maintenance Services” will move to NAICS code 56179, Other Services to Buildings and Dwellings, which will also include swimming pool cleaning and maintenance and furnace, duct, chimney, gutter, and drain cleaning services. The “Except Lighting Maintenance Services” portion of SIC code 7349 will move to NAICS code 56172, Janitorial Services.

²Source: *MarketPlace* analysis.

³These figures are taken from Bureau of Labor Statistics 1995 and 1998 Employment and Earnings data.

The cleaning and maintenance services industry is clearly dominated by small businesses. The largest (by revenues) 13 companies (the top 6 franchisers and top 7 non-franchise companies) had in 1998 only an 11.4% share of the market, according to MarketData Enterprises. Only about 14% of the companies were part of franchises; the other 86% of firms are independents. In addition, about 77% of all firms had fewer than 5 employees in 1997. Finally, four-fifths of U.S. cleaning firms have annual sales below \$200,000.

In Missouri at the beginning of the fourth quarter of 1999, there were 1,045 businesses in SIC code 7349, with a total of 19,522 employees.

In the sections that follow, characteristics of the national BMS industry will be summarized. The primary sources of data are trade publications, proprietary business databases, and U.S. government statistics. We first examine recent sales trends and customer characteristics. An analysis of the extent and types of competition in the industry is presented, followed by an examination of the impact of technology on the industry. We conclude the report with a discussion of the challenges facing the BMS industry and a discussion of the issues warranting further research. While this report focuses primarily on the national picture, we see no reason why the Missouri BMS industry would depart significantly from national trends. The reader should nevertheless be aware that, despite the national view of this initial report, our ultimate goal in undertaking this research is to identify issues that will be examined in the context of the Missouri BMS industry.

Sales Trends and Consumer Characteristics

Recent Sales Trends

While official statistics, which cover only SIC code 7349, report that annual industry revenues are about \$20 billion, many persons familiar with the industry believe that number understates the value of the cleaning market by 50% or more. That is, the true value of the market may approach \$50 billion per year. At least part of the difference in market size estimates derives from market definition, but the extent to which that is the case is unclear.

The trade literature shows more agreement on other issues. First, the largest market segment is commercial buildings. The industrial and residential markets are smaller, but are growing more rapidly. Furthermore, the industry is growing rapidly, with most estimates putting the annual growth rate in the range of 5% to 10% per year. The industrial sector will be positively affected by increasing plant construction and a growing trend towards outsourcing cleaning services for the large amounts of existing manufacturing floor space. Further gains in the residential market will be fueled by rising home ownership and an increase in the number of dual-income families, who have less time available for household cleaning. In addition, as noted above, the industry is clearly dominated by small businesses.

Who Are the Customers?

Office buildings make up the largest segment of the market. Floor care, trash collection, restroom care, dusting, vacuuming, and carpet cleaning, in that order, are the most

common office cleaning services. The industrial and residential markets are smaller, but are growing. The residential market can be broken down by age groups. In 1996, 45% percent of households that purchased housecleaning services were headed by persons 35 to 54 years old, according to *American Demographics*. Only slight growth (about 1%) is projected through the year 2006 for this age group. The 55-to-64 age range is the fastest-growing segment of buyers of housecleaning services.

The industry's customer base is not static; the cleaning, maintenance, and restoration industries are changing. For example, insurance companies needing restoration work on policyholder properties are increasingly turning to professional cleaning firms, creating opportunities for industry members to expand service to these growing markets.

Industry Competitive Analysis

Industry Structure

General. Based on national data, the U.S. BMS industry appears to be relatively unconcentrated. Data from the 1992 Census of Manufactures shows that the largest 4, 8, 20, and 50 firms in the industry account for 12.3%, 16.5%, 21.2%, and 27.1%, respectively, of total industry sales. Because building maintenance markets are local in scope, these national data probably understate the level of concentration in local markets. In addition, nationally franchised companies may possess some brand identification characteristics that give them market advantages over local firms. Nevertheless, even casual observation indicates that there are enough cleaning firms in local markets to ensure a workable level of competition. This is a low-tech business characterized by ease of entry. Competition is intense, holding down contract prices and ultimately, profitability. Despite its competitiveness, however, the industry has recovered nicely from the last recession, with receipts growing 6% to 11% annually since 1994.

It is fair to say that the industry is fragmented. The Building Service Contractors Association International (BSCAI) has 2,800 members; the Institute of Inspection, Cleaning, and Restoration Certification (IICRC) has 12,000 certified cleaners; the International Executive Housekeepers Association (IEHA) has 5,200 members; the Association of Specialists in Cleaning and Restoration (ASCR) has 1,000 members; and the International Society of Cleaning Technicians (ISCT) and other small regional associations have a couple of hundred members each.

An important trend that has emerged in recent years is subcontracting. Subcontracting began as a way for BMS firms to offer specialized cleaning services, such as window or carpet cleaning, without investing in additional equipment, workers, or training. A contractor could land an account and then hire a more specialized subcontractor to perform certain tasks. New subcontracting alliances, ones in which the primary contractor acts as a type of cleaning broker, are becoming more commonplace. While master contractors are finding subcontracting a lucrative way to expand business, there are an equal number of incentives for smaller BMS firms to sign on as well. Many firms are too small to obtain large accounts on their own, but by subcontracting from large firms, small companies are able to work on a nationally recognized account. According to Laura Dellutri, president of the National Association of Independent

Cleaning Contractors, “Subcontracting can be lucrative for everyone involved, and I think we’re definitely going to see more of it in the coming years.”

While only 14% of BMS firms are franchise operations, there may be an increasing movement to franchising in the future. Advantages of franchising include easier entry into the insurance restoration market segment, higher profit margin resulting primarily from the specialization that typically accompanies franchising, owner equity enhancement resulting from brand recognition, and greater growth potential.

Consolidation Trends. A recent trend in consolidation in the BMS industry is buying and then integrating companies into a single consolidated company. This approach, sometimes referred to as “rolling up,” has been gaining strength in the BMS industry for years. Washington, DC—based Consolidation Capital Corp. (CCC) is not the first company to build a national or international business in this arena, nor is it the first to look toward offering single-source facilities management. CCC likes to build businesses in recession-resistant industries, such as cleaning and maintenance, that have recurrent revenue streams, contain few publicly traded companies, and are not dependent on technological change.

Until recently, the consolidation trend affected mostly the distribution of cleaning supplies but is now aimed at BMS companies. Consolidations are both vertical and horizontal. For example, carpet dealers are becoming (through acquisition) carpet cleaners, and some real estate companies are considering buying cleaning companies to become a full-service provider. Consolidations are even crossing national borders, as the Boston-based buyout firm BG Affiliates has invested \$30 million in equity in SMS Modern Cleaning Services. This is just one of many recent purchases by BG Affiliates of Canadian office building cleaning firms.

While the consolidations are motivated primarily by potential profits, there are advantages for customers as well. Some consolidators value the relationship-oriented nature of building maintenance services. One result will be more innovative equipment that is better for both labor and customers. There will also be more one-stop shopping for building owners and managers. Of course, consolidation can also be seen as a threat by existing companies. Regional companies that want to stay independent and see growing competition for large contracts are concerned. So are mom-and-pop operations, which typically feel the squeeze in every industry that experiences consolidation.

Labor Market Issues and Supplier Characteristics. Labor is an important cost item for BMS firms. Payroll expenses amount to approximately 50% of total receipts. Annual pay per employee ranges from below \$12,000 to about \$40,000, with the higher figure applying only to unionized workers in the Northeastern United States. The average falls between \$15,000 and \$20,000 per year.

The recent low unemployment rate and healthy economy has made the already difficult task of finding good maintenance workers even harder. The median turnover rate in 1994 for full-time employees was 12%, and the mean turnover rate was 37.8%; for part-time employees the rates were, respectively, 50% and 76.6%. *Cleaning and Maintenance Management* magazine’s 1998 survey reported that the turnover rate for in-house employees is barely one-third that for contract cleaning employees, while the

former group receives a 22% higher average wage rate. Data from 1994 reported by Marketdata Enterprises show that workers making less than \$5 per hour had a 20% turnover rate, while those making \$5 to \$8 per hour had only a 2% turnover rate.

Given the overall low pay levels in the industry, it is not surprising that turnover in building maintenance employees is high, although the direction of causality is neither clear nor necessarily one-way. Does the low pay result in or result from high turnover rates? The correct answer is most likely both. According to William R. Griffith, President of Cleaning Consultant Services, Inc., "The classic approach in the past has been to hire new workers, grind them up and spit them out as if we had an endless line of people waiting to go through the experience." In today's economic boom, that line of potential employees has shortened considerably, and in the process the cleaning industry has gotten a bad name in the eyes of potential workers and customers. The customer loss rate, which can go as high as 45% per year for janitorial businesses, is partly caused by the customer's dissatisfaction with the company's service, which can in turn be attributed partly to workers who are poorly prepared and trained to ensure customer satisfaction.

One of the projected benefits of welfare reform was the influx of new workers it would provide to certain labor-starved industries. The BMS industry, with its great demand for new employees, seemed to be an ideal destination for some of the more than 2 million adults that left welfare for jobs since 1996. But while some welfare-to-work employees are finding their way into the BMS industry, the business of cleaning maintenance has apparently been largely passed by. Poor communication, substantial training requirements, and complex hiring incentive programs have conspired to keep these new employees away. The recent hot job market has allowed former welfare recipients to enter other industries. Furthermore, employers are not aware of the existence and details of welfare-to-work programs, and there is a need for employers to help workers with transportation, child care, and training. Small companies, which make up the bulk of the businesses in the industry, cannot afford such extras.

More than 60% of respondents to an industry survey say they employ senior citizens at their in-house cleaning operation, and one in two facility managers report individuals with physical disabilities or disabling conditions on their payrolls. Some analysts suggest that cleaning firms should search for workers among the under- and self-employed and part-timers, who are by their actions saying they want to add to their earnings but may not be as in demand as they had hoped. They also advise guarding against hiring people without background checks for positions involving certain duties, such as handling money, driving vehicles, or being around children.

Cleaning and Maintenance Management magazine's ninth annual survey of in-house managers finds that, overall, starting hourly wages for cleaning workers rose an average of 2.5% during 1998. The biggest regional increase in average starting hourly wages was in the Plains region, where new workers were paid \$7.70 per hour, an increase of 7.5% over 1997 wages. Managers report that average hourly wages for starting in-house cleaners in 1997 rose 5% over the average amounts reported for 1996. The average hourly wage for a typical cleaning worker rose by 3.5% during the same time. According to Bureau of Labor Statistics data, janitors and cleaners who usually worked full time averaged about \$300 per week in 1996. The middle 50% earned between \$240 and \$420,

10% earned less than \$190, and 10% earned more than \$560. Supervisors earn about 25% more, on average.

Evidence indicates that contract cleaners pay their employees less than workers in similar jobs hired "in-house." The 1998 Contract Cleaner Statistical Survey (*Cleaning and Maintenance Management* magazine) reports the average starting wage of contract cleaning workers is \$6.24, while that for in-house cleaning workers is \$7.59, more than 18% higher than contract workers. Since 1991, the gap in starting wages has ranged from 16% to nearly 21%. Also since 1991, wage increases for both groups have totaled about 21%. This increase is the result of a number of factors, including the tight labor market that forces employers to offer higher wages and salaries to attract good, dependable cleaning workers and an increase in unionization at contract cleaning firms.

It may also be instructive to look at this labor market from an occupational standpoint. People classified as janitors and cleaners or cleaning supervisors held slightly more than 3.2 million jobs in 1996, with supervisors accounting for only 5% of those positions. About 24% worked for contract BMS firms, 16% worked in schools including colleges and universities, and about 14% worked in hotels. Others were employed by hospitals; restaurants; operators of apartment buildings, office buildings, and other types of real estate; churches and other religious organizations; manufacturing firms; and government agencies. The Bureau of Labor Statistics projected a 23.4% increase in the number of jobs for custodians and cleaning workers, including maids and housekeeping cleaners, from 1996 to 2000, but more recent projections foresee slower-than-average growth of below 10% in this employment sector through 2006.

Competition

A major trend in the provision of cleaning services is outsourcing, as businesses that require cleaning services are moving away from in-house staffs to hiring outside contractors. This change will lead to growth in the number and size of cleaning contractors, opening opportunities for such firms. At the same time, competition for existing customers will increase as new firms enter the industry. Increased franchising and consolidation activity could make it more difficult for small independents to survive.

Technology: Industry Productivity

The pace of technological advance in the cleaning industry has been notoriously slow, but that is changing dramatically. Manufacturers are developing and refining new products and processes to improve productivity and work quality of cleaning professionals. Sweeping, vacuuming, burnishing, and dusting are all old technology that will in many applications be replaced by approaches that result in more thorough cleaning. Managers who can stay abreast of changing equipment and process technologies will move further ahead of their competition and help ensure job security throughout their operations.

Specialized cleaning technologies, such as super-heated or vaporized steam, high-pressure washers and wall cleaning equipment are rapidly replacing the scrub brush, mop, and bucket. These can remove most types of dirt with minimal effort. Computerization of housekeeping operations has taken over, from chemical dispensing systems to floor scrubbing equipment. Computers have also become workhorses in the management of

personnel by handling payroll and maintaining updated records on quality assurance and training. In the past, workers cleaning 2,500 square feet per hour would commonly claim to be overworked, but 5,000 square feet per hour is commonplace today, and industry observers expect that with the advent of team cleaning, backpack vacuums, and other productivity-enhancing techniques, 7,500 square feet per hour is not far off as the industry standard.

Building maintenance firms spend on average several thousand dollars on powered cleaning equipment each year. Although the industry is usually regarded as low-tech, technology has been used to make many types of maintenance equipment lighter and more ergonomic, which in turn makes employees more productive. Ease of use has always been a major concern regarding the design of floor care equipment. The less complicated a machine is, the easier it is to use and maintain; operators will spend less time being trained and more time cleaning; and machines with easy-to-use features can help prevent operator accidents and injuries.

Robotics are moving rapidly into floor care equipment, which raises an important question: Can cleaning be done without people? The rise of robotics is only a threat to those operators with little equipment knowledge. Trained, experienced operators will be necessary to properly operate and maintain equipment. In many situations, judgment will still be required, and robots cannot be programmed to make judgment calls. Robotic cleaning equipment is best suited to scrubbing and vacuuming open areas such as corridors and gyms. Equipment that uses a laser-based navigation system will soon be available. In appropriate circumstances, robotic floor-cleaning equipment is fully automated and self-teaching and offers more consistent cleaning. Equipment manufacturers claim 80% to 90% labor cost savings relative to traditional cleaning methods.

Computer technologies can also improve management practices. Cleaning operation managers increasingly are using computerized maintenance management software (CMMS) to do their jobs better, quicker, and more efficiently. Of course, managers must be aware that some glitches still exist before a program can be implemented, especially those unique to a specific maintenance operation.

Furthermore, improved management practices are gaining acceptance among both contract and in-house cleaning operations. For example, Kaiser Permanente Medical Center in Fontana, CA, has revamped the team cleaning concept to meet hospital demands for cleaning, disinfecting, and sanitizing, as well as the handling of medical waste. The move has reduced labor costs by 28% in comparison to traditional zone or team cleaning.

Advances in technology have also led to new products that protect the maintenance and custodial worker more so than equipment of the past. Gloves made of Nitrile are extremely puncture resistant and comfortable. Respirators manufactured with dense cloth filters help filter out viruses and other microscopic hazards.

The technology for self-cleaning buildings already exists, as is confirmed by examining cleaning operations for the manufacturing cleanrooms used in computer and high-tech industries. Although this technology has yet to be used in office buildings, there are signs that it soon will be in some applications. The first signs are the use of low- and no-maintenance surfaces. Medical, food processing, pharmaceutical, and other

critical industries are already exploring the possibilities to utilize cleanroom technology. Recent advances in topical coatings technology are also reducing cleaning requirements. The TOTO KIKI Company in Orange, CA, sells ceramic tile that is basically self-cleaning.

The role of the worker will shift from doer to planner. Someone has to fill the tank, program the machine, and monitor results. New technology will reduce the amount of hard labor workers do, but workers will never be entirely eliminated. There will always be cleaning and maintenance work that only humans can do effectively. But advanced technologies are clearly making important inroads into the industry. Robots, sensors, and control systems will actually free workers from some mundane tasks and let them take on more challenging and special cleaning projects.

General Strategic Issues

The profitability of a business depends upon both the overall degree of competition in an industry and the position of the business relative to its rivals. A business has little control over the general degree of competition in its industry but can take strategic actions to position itself favorably relative to its rivals and thereby influence its profitability. Businesses that earn profits above the industry average typically do so because they find a sustainable competitive advantage. This advantage allows such firms to position themselves relative to their rivals in ways that emphasize their relative strengths; and this in turn allows them to better cope with the various forces of competition.

It is common to distinguish between two broad strategies to achieve competitive advantage. The first is cost leadership, and the second is product differentiation. Each of these strategies represents a different route to sustainable competitive advantage and above-average profitability. Moreover, no matter which of these approaches is adopted, a firm also needs to determine whether it will compete for all buyers in a particular market or focus on just a target segment of market. Successful firms will choose a strategy and target segment based upon their own individual strengths and weaknesses.

Cost leadership is a strategy of attempting to become the low-cost supplier in the industry. Sources of cost leadership are varied but would include such things as pursuit of scale economies, use of proprietary technology, preferential access to raw materials and other inputs, and specific knowledge of customer needs. Firms pursuing this strategy must seek out all sources of cost advantage while at the same time produce a product that is perceived as comparable to that of rival firms.

In a **differentiation strategy** a business attempts to make itself unique in an industry along dimensions that are considered valuable by buyers. The business needs to find attributes that buyers perceive as important and position itself to meet those needs. The attributes along which differentiation may be achieved are extremely broad, including the product or service itself, the delivery system used, the marketing approach adopted, and so forth. To be successful in a differentiation strategy, a business must choose attributes to emphasize which will allow it to be perceived as distinct from its rivals. For products sold to consumers, rather than to firms processing them for later sale, differentiation is often a more promising strategy.

No matter whether cost leadership or product differentiation is pursued, a firm must

also decide how broadly over the market it should compete. Most markets contain so-called segments. These segments are distinct customer groups who possess a common set of characteristics or special needs. In consumer goods industries, for example, buyers may be segmented by income levels, frequency of purchase, knowledge of the product, and so forth. Industrial goods buyers may be segmented by size of buyer, willingness to trade price for quality, location, or special product needs. A firm needs to determine whether it will attempt to serve all of the market segments or focus upon target segments.

When a firm focuses, it aims to better serve a single or small number of buyer segments in an industry. For some segments this will require a firm to be a low-cost producer. In other segments a firm may compete by offering a differentiated product. Firms that become very narrowly focused (specializing perhaps in as little as one segment with a single product) are often said to be following a “niche strategy.”

By their very nature, small businesses typically must focus on only one or a few segments of an industry. Whether a strategy of low cost or product differentiation is appropriate depends upon the nature of the buyers in the segments being pursued and the positions of rival firms competing for those same buyers. Consider for example the following sets of questions in reference to a particular buyer segment:

1. Are the products or services produced for this segment virtually standardized? Purchase of standardized goods and services are generally made on the basis of price alone.
2. Can the attributes of the product or service and its quality be ascertained by the buyer prior to purchase? Such products can be judged as to acceptability by buyers, and for a given quality a supplier must also offer the lowest price.
3. Are the buyers extremely price sensitive and unwilling to pay much of a premium for enhanced quality or image? In some cases nothing matters other than price. As a result, only firms able to offer the lowest prices are able to survive.
4. Is little post-sale service required for this product? Competition in segments in which post-sale has little or no significance often will turn on price alone.

If each of these questions is answered affirmatively, then for this particular segment cost leadership is the dominant strategy. Segments displaying these characteristics offer little scope for creating value to buyers through differentiation efforts. Successful firms will be those that manage to achieve minimum cost in serving this type of target segment.

Product differentiation becomes a more viable strategy in segments where the conditions given in the questions above do not prevail. Under these circumstances, firms have the opportunity to offer differentiated products or services with attributes that are especially desired by at least some buyers. Firms successful in product differentiation benefit through the ability to obtain price premiums for their products.

The BMS industry is characterized by the existence of numerous small firms and ease of entry. Because of these conditions, firms in the BMS industry are likely to face significant competitive price pressure despite the favorable outlook for overall industry growth. Firms that are successful will be those that are able to provide their services at lowest cost or manage to differentiate their services.

Achieving low cost requires that firm managers stay abreast of changing equipment and technologies which increase employee productivity. Since high employee turnover reduces productivity and raises training costs, managers should also investigate mechanisms (e.g. compensation schemes, promotion policy) which reduce employee turnover.

Firms may achieve differentiation by specializing in the services they provide. Specialized expertise in restoration work, for example, allows firms to meet the demands of insurance companies who require such kind of work. Specializing in a particular cleaning service (e.g. window cleaning) may make it possible for a firm to become a subcontractor that performs tasks for master contractors. Larger firms may differentiate themselves by gaining the required expertise to participate in the maintenance of so-called clean rooms.

Although the demand for cleaning services is expected to grow, the industry has characteristics that create an extremely competitive environment. Firms that succeed in the BMS industry will be those that can deal with the competition. Firms that evaluate their strengths and weaknesses and develop a coherent strategy for operating in this market will have a greater chance at success.

Challenges: Opportunities and Threats

The cleaning industry clearly faces many challenges in the years ahead. There is a worsening shortage of qualified workers in most areas of the country. Contract cleaning accounts may be more plentiful and larger, but the competition for them is fierce and profit margins are tighter. Advancing technology in cleaning equipment and processes will require workers with greater skills. Customers are demanding more with each signed agreement: more quality, more professionalism, more accountability, and more work, all for less money.

Environmental, Safety, and Labor Regulations

Like many industries, the BMS industry is faced with increasing regulations governing exposures of workers and the general public to unsafe materials. Large and small cleaning contractors face concerns for hazards to the workers, surfaces, and ecosystems they work with. Concerns for indoor air quality, waste disposal, waste reduction, recycling, and bloodborne pathogens are all increasing, and the liability and the costs are sufficiently high that all firms must be aware of these issues. The role the professional cleaner plays in safeguarding public health is more critical than ever. Failing to mix chemicals accurately and perform scheduled cleaning can lead to legal liability, financial loss, environmental damage, and a further weakening of people's ability to fight off attack from microorganisms.

Concerns about indoor air quality (IAQ) and "sick building syndrome" represent both a threat and an opportunity to cleaning contractors. BMS firms face an increasing emphasis on cleaning without putting harsh chemicals back into the environment. Before the risks of traditional practices were understood, a common approach to cleaning was to simply spray a variety of chemicals. As more is understood about the effects of many chemicals, the fumes and volatile organic compounds that are released during cleaning

are increasingly seen as a problem. As a result of these heightened concerns, cleaning chemicals are being changed to reduce hazards to workers using them and to people who work in the buildings where the chemicals are used. Although changes in the political makeup of the U.S. Congress slowed the pace of regulatory activity, it is clear that IAQ will continue to be scrutinized by environmental regulators. Industry experts believe that, even in the absence of increased regulation, the threat of litigation from building tenants and contractor employees will be the driving force behind changes in the industry.

But these heightened concerns also can represent an opportunity to BMS firms. For example, two recommendations for maintaining good IAQ are to periodically have carpet and upholstery professionally cleaned and to “clean for health.” Cleaning contractors who can help building managers control the sources of contamination will give themselves an additional way to promote their services. Even pressures to increase fresh airflow may provide cleaning opportunities, because increasing the inflow of fresh outside air may increase the amounts of other sorts of dirt that will have to be removed.

Finally, cleaning firms need to be aware of the legal status of materials that are sold to them by suppliers. One area of controversy is the sale of ineffective disinfectants. Last fall, EPA’s New York City regional office filed a civil administrative complaint against SafeTec of America, Inc., charging the Buffalo, NY, company with selling and distributing four unregistered antimicrobials. It seeks \$230,500 in penalties, and SafeTec is disputing the violations. This complaint and another similar one includes a list of the customers who purchased the unregistered products. While no penalties have been levied on customers (i.e., on cleaning contractors using the products), BMS firms could find themselves liable in legal proceedings concerning the failure of the products in question to perform as advertised. BMS firms can guard against such potential problems by determining that products promoted as disinfectants are in fact registered with the EPA, and by following industry standard cleaning procedures regardless of the products being used.

Hazardous cleaning materials obviously pose potential threats to cleaning contractors’ employees as well. The threats presented by hazardous materials to maintenance workers will continue to challenge managers seeking to protect workers. Regulatory agencies continue to impose new standards aimed at formalizing approaches to handling hazardous materials in the workplace. There are three OSHA standards that are of importance to cleaning contractors: the hazard communication standard, rules governing the occupational exposure to bloodborne pathogens, and rules covering personal protective equipment (PPE) for general industry. Indeed, according to OSHA, the top three standards cited as being violated during inspections of building maintenance firms from October 1996 through November 1997 were in these three areas. Over the years, significant changes in PPE have taken place with the development of materials that can resist many elements. This development not only keeps workers safe but also alleviates fear, enhances effectiveness, and will in the long run prevent some cumulative disorders.

Finally, cleaning contractors must understand general regulations governing the employment of workers. Business owners must verify the eligibility of foreign citizens for U.S. employment. Wage and hour violations can cost contractors thousands of dollars in penalties and legal fees, potentially embarrassing publicity, lawsuits, and even criminal prosecution. Most violations are not deliberate, but the time involved resolving them is

costly, taking contractors and cleaning and facility managers away from running their businesses and serving their customers.

Keeping Clean Rooms Clean

A challenging new market for cleaning contractors is the maintenance of environments in so-called clean rooms, which are used by electronics manufacturers, health care facilities, food producers, and many other industries. Housekeeping procedures for high-tech environments are radically different from general office cleaning, but such work can be extremely lucrative. Equipment costs and questionable cleaning solutions are not the only challenges cleaning contractors can face in servicing clean rooms. Performance bonding costs have prevented some contractors from chasing contracts in the high-tech field. And the performance standards are exacting. For example, Class 1 clean rooms must be *100 times* more sterile than an operating room. Dust levels cannot exceed 1 particle in excess of 1 micron in size per cubic foot per minute. In contrast, a typical room measures 350,000 times that amount of dust. Despite these challenges, a well-prepared contractor can do very well in this market niche. According to Jon Whitaker, vice president of a firm that contracts in this market, "When you get in, there's a lot of money to be made."

Directions for Future Research

This initial research has yielded much useful information about the characteristics of the U.S. BMS industry. But it also raises a series of questions about the details of what has been uncovered thus far. Questions that should be answered by future research include, but are by no means limited to, the following:

1. Is the outsourcing of cleaning services likely to continue to be a source of growth for the industry, or has the extent of outsourcing reached a limit? More generally, is there a set of statistical or other indicators concerning the existing and likely future extent of outsourcing for building maintenance and other business services?
2. To what extent could the industry help itself and potential workers through stronger efforts to participate as employers in welfare-to-work programs?
3. Are there any significant relationships to be found between, on one hand, wage levels and the amount and quality of training provided to new and existing employees, and on the other hand, employee retention, costs, customer satisfaction, and customer retention?
4. Are increasingly stringent health and safety regulations likely to decrease the ability of small independent contractors to survive, resulting in an industry more and more populated by consolidated and franchised firms? Is converting to a franchised operation a viable option for independents?

As the research of the CCA and its contractors continues, we look forward to discovering the answers to these and other questions that are certain to arise.