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MANAGING AN INDOOR AIR QUALITY (IAQ) PROBLEM IN A PUBLIC BUILDING

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ABSTRACT

Indoor air quality (IAQ) and building-associated illness (BAI) are not new and much has been reported in the literature about these problems, the criteria that distinguish "sick" from "healthy" buildings, remedial actions that restore building function as originally intended, and efforts to ensure the health and comfort of building occupants. What has been overlooked, however, are two other important issues: first, that IAQ problems constitute institutional crises and should be managed as such and, second, that in the management of the crisis, the health and comfort of the manager can be as adversely affected—through crisis-induced stress—as that of the occupants. The longer it takes to identify the antecedents of the problem and institute corrective action, the more likely the performance, productivity, and morale of everyone, including the manager, will be unfavorably affected. Most of these adverse consequences can be avoided if the manager accepts the notion that IAQ problems constitute crises and that crisis-management techniques are the most effective means of dealing with the situation as well as the health and comfort concerns of the occupants. The manager is particularly challenged if the IAQ problem becomes bound with bureaucratic "red tape" so often found in public agencies. In that case, implementation of crisis-management strategies, although imperative, may be difficult.

INTRODUCTION

Much has been reported in the literature and at conferences about indoor air quality (IAQ) and building-associated illness (BAI), remedial actions necessary to restore building function as originally intended, and efforts to ensure the health and comfort of building occupants. Individuals who have been personally involved recognize that managing the events related to an IAQ problem involves more than merely establishing the criteria that differentiate a "sick" from a "healthy" building and introducing corrective actions. Yet, little information is available regarding either the perspective of the "the middle manager," who must deal with these issues, or specific advice on how to manage during turmoil.

The authors suggest that while IAQ problems, particularly Sick Building Syndrome (SBS), are special, with no two case studies being identical, they have at least two commonalities besides non-specificity of symptoms—1) IAQ problems constitute institutional crises and should be managed as such; and, 2) in the management of those crises, the health and comfort of the manager can be as adversely affected—through crisis-induced stress—as that of the building occupants.

In addition, should the manager not possess sufficient understanding of the essence of IAQ problems or, perhaps more importantly, the requisite authority for decisive action, a timely resolution of the problem will not be forthcoming. The longer it takes to identify the antecedents of the problem and institute corrective action, the more likely it will be that the performance, productivity, and morale of everyone—including the manager—will be unfavorably affected. The manager is particularly challenged when the IAQ problem becomes bound with the bureaucratic red tape so often found in public agencies. In that case, implementation of crisis-management strategies, although imperative, may be difficult.

PUBLIC INSTITUTIONS AS BUREAUCRACIES

Although the intention of a bureaucracy is to achieve objectives with efficiency, the perceived slowness in response and resistance to change often are criticized as "red tape" (Lanford 1981). The impersonal nature of a bureaucracy results partly from controls, restrictions, or requirements which were designed for a purpose, often to protect citizens from harm (Kaufman 1977). It has been suggested that lagging responses may be advantageous because they tend to prevent drastic actions pursued by extremists (Jansen 1978). Nonetheless, even successful programs or institutions have been criticized for their red tape when they are excessively slow in their actions (Kaufman 1977).

The bureaucratic approach often is equated to public agencies, which are characterized by their central administration (Kharbanda and Stallworthy 1986). While bureaucracies may seem to be impersonal and antidemocratic, the character of an organization is determined by the persona of its management and criticisms of bureaucracies conceivably result more from human behavior than the organization per se. That is, if a bureaucracy does not function, it may be the fault of the managers and staff, not the hierarchical structure (Lanford 1981). Managers who do not maintain a direct involvement at all levels of operations and two-way communications risk being overwhelmed by the unexpected (Meyers and Holusha 1986).

Nothing unsettles a bureaucracy more than uncertainty and, when exposed to unexpected trouble or crises, bureaucrats generally respond by going through characteristic stages (Fink et al. 1971). This is because bureaucracies generally develop conformity, overlook informal organization, and provide the bureaucrat (i.e., crisis manager) with little flexibility of action in dealing with crises (Lanford 1981). These observations have led to the suggestion that bureaucrats should not manage projects because those projects would be ". . . doomed from the start" (Kharbanda and Stallworthy 1986).

RECOGNIZING IAQ PROBLEMS AS CRISES

Indoor air quality problems often develop into crises which, by definition (Webster 1986), are ". . . turning points for better or worse; situations that have reached the critical phase." If not controlled, crises may escalate in intensity, come under close media or government scrutiny, interfere with normal business operations, jeopardize the positive pub-

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TABLE 1

Stages and Outcomes of Managed and Unmanaged Crises

Stages of Crisis	Outcomes: Managed	Outcomes: Unmanaged
Pre-crisis	Evidence, acknowledgement, resolve	Non-performance, denial, anger
Crisis	Climax, assessment, direction	Failure, panic, collapse
Post-crisis	Rebuilding, recovery, reform	Shock, radical change

From: Meyers and Holusha, 1986

lic image of the company or entity, and damage the company's "bottom line" (Fink 1986). Consequences of crises include general uncertainty, multiple and simultaneous problems, need for extraordinary resources, time constraints, stress, change in power structures, and change in communication patterns (Jung 1979).

In the process of verifying that the complaints constitute valid building-associated illness, the manager likely will be faced with anxious occupants who, perceiving they have been exposed to an occupational health risk and potential post-exposure health problems, pressure for a quick solution to the problem. These individuals expect the manager to provide a speedy, but effective, solution while higher authority may remain skeptical about whether a "real" problem exists. These conflicting views may result not only in limited or no action but also contribute to increased frustration in both managers and occupants. The frustration may intensify and turn to anger if the IAQ problem is not remedied quickly.

Public institutions often are incapable of responding rapidly even when managers are sympathetic to the needs and concerns of employees (i.e., providing a safe and secure workplace) in a manner consistent with fulfillment of institutional goals. Reminders that a public agency is a bureaucracy, fraught with red tape, are likely to fall upon deaf ears. Cutting red tape means expediting solutions but bureaucracies often respond slowly (Kharbanda and Stallworthy 1986). This is partly because the ability to cut red tape may not be within the grasp of first-line administrators (i.e., they are not empowered to cut red tape and therefore cannot deal with problems expeditiously) and partly because higher authorities also must be sensitized to and agree that an IAQ problem exists and that their assistance is required in the solution. While strategies may differ between private- and public-sector buildings, solutions for IAQ problems appear to involve crisis-management strategies in both public and private organizations.

ESSENTIALS OF CRISIS MANAGEMENT

Stages of Crisis

Crises emerge in definable stages but outcomes vary depending upon whether the crisis is managed or unmanaged (Table 1). When crises are unmanaged, the warnings of the pre-crisis period are either undetected or unheeded and this results in objectionable consequences of the crisis and post-crisis stages: obvious failure, attendant publicity, panic, and collapse (Fink 1986). However, even if the warning signs go undiscovered, in a well-managed crisis all actions through the crisis stage are expedited to ensure an early resolution (Fink 1986).

In the pre-crisis stage there is a perception that something is wrong (i.e., lowered productivity, increased worker complaints) but uncertainty about what is causing the problem. Because the problem usually is not visible to the outside world, it is during this period that detection and intervention will do the most good. In the second—or crisis—stage, the outside world is aware of the problem, all employees are affected, there is a loss of common purpose and cohesiveness, information is biased by emotion, available data are subject to multiple interpretations, infighting begins, and decisions are debated/challenged rather than obeyed. Should the crisis continue uncontested, the last stage—or post crisis—is characterized by shock, uncertainty, and radical change. It is particularly difficult for managers in public agencies because any failure that is perceived to affect the public usually brings about increased scrutiny and regulation (Meyers and Holusha 1986).

Many buildings with complaints thought to be related to indoor air problems have been investigated by industrial hygienists and others who could detect no variance with industrial standards. Rather than concluding that a problem may exist even though the building met standards, the building manager may conclude that no problem exists. Unfortunately, the consequence of this type of response only delays recognition of the pre-crisis stage and initiation of meaningful intervention.

Identifying the Crisis

The sooner the symptoms of crisis stages can be discerned, the sooner they can be dealt with in a timely manner (Slatter 1984). However, recognition that crises exist may be complicated by the fact that they often are accompanied by other problems (Fink 1986). This is particularly so for crises that result from IAQ problems because of the non-specific symptoms of SBS or BAI and the fact that managers often do not possess sufficient understanding of the problem to make an early diagnosis. All of these considerations may delay, but should not prevent, identification of the real crisis, which may be accomplished by applying questions such as: Will the situation escalate if left unattended? Will it promote unwanted media attention? Will it interfere with normal business procedures/programs? If the answer is yes to any of these, there is a high probability that the crisis has been identified.

An example of delay in problem recognition and timely resolution is the Texas public school building in which a number of health problems were alleged to be caused by a distinctive odor that was detected when the building was new and persisted for the next nine years (Winfield 1987). While many individuals initially viewed the problem as a nuisance or a joke, some parents believed that the symptoms (fatigue, nausea, sore throat, eye and nose irritation, headache, and stomachache) experienced by their children were caused by the odor. The Texas Department of Health was asked to investigate the problem three times over a four-year period and, although each time it reported that no health hazards had been found, the complaints persisted. The odor problem (caused by the integral styrene-butadiene synthetic rubber backing of the carpet) was finally resolved because of the persistence of concerned parents who formed a community action group and invited the local press to their meetings (Winfield 1987).

Isolating the Crisis

Crises, like communicable diseases, cannot be cured through inattention (Meyer and Holusha 1986). Although an IAQ crisis may encompass only part of a building, unless it is isolated its consequences can affect the whole organization. That is, all employees may react to the crisis through loss of common purpose and cohesiveness or development of fuzzy, conflicting goals. Those consequences can be avoided by appointing a crisis manager who is authorized to make financial decisions and who perceives the needs of employees and the institution. That individual must be able to communicate with workers and motivate them to achieve institutional goals (Dyer 1978).

The consequences of failing to effectively communicate and isolate a crisis are apparent from the report of an acute indoor air pollution problem associated with renovations in a city office building (Lee et al. 1987). Renovations of the basement of a 40-year-old, six-story building resulted in reports of symptoms such as headache, nosebleeds, coughing, and tachycardia. Although the health department had investigated these employee complaints, the resultant recommendations either were partly ignored or bypassed. This, together with poor communications between contractors and building occupants and between management and employees, exacerbated the problem, caused increased complaints, and ultimately affected three departments before corrective action was implemented (Lee et al. 1987).

Managing the Crisis

While the manager may identify and isolate the problem, resolution may be delayed because, in a bureaucratic organization, additional layers of management must be sensitized to the nature of the problem and establish the necessary prioritization for successful remediation. Clearly, the manager is placed in a pressure situation, one that he or she may not be prepared to handle. Retreating behind closed doors and avoiding confrontation and problem resolution only serves to further exacerbate the situation.

An example of timely and effective corrective action regarding an indoor air problem involves a large-vehicle storage building in which a need for improved ventilation was perceived to be related to symptoms (headache, eye irritation) of employees caused by odors and a high concentration of polluted air emitted by the vehicles (Curnew 1988). In keeping with a general department policy of improving indoor air quality in practical, but energy-conserving ways, a solution for detecting and removing polluted air was developed for the vehicle storage building and also later applied successfully to other buildings.

THE CRISIS MANAGER

Unanticipated events—and IAQ problems fit into this category—augment the potential for crisis and it is the middle manager (Table 2) who often is called upon to manage the crisis. It is reasonable to assume that this increases the complexity of the manager's workload and, while conflict and ambiguity represent a measure of challenge, they also cause stress and impaired performance (Broussine and Guerrier 1983). Even though the climate of the organization may determine whether the manager utilizes a proactive or reactive mode of coping with the crisis, the latter approach inevitably leads to denial, avoidance, and eventually stress. The proactive manager, on the other hand, seeks assistance in problem-solving, which reduces the likelihood of stress (Broussine and Guerrier 1983).

TABLE 2

Features Common to Middle Managers

- Accountable to someone above them in organization
- Rarely have authority to formulate policy
- May play a role in formulating policy
- Accountable for implementing policy
- Accountable link between those who achieve policy (employees) and those who formulate it (management).

From: Broussine and Guerrier, 1983

Nonetheless, crisis managers will be confronted with uncertainty as the problem persists or escalates (Andriole 1985). As a consequence, conflict may develop between the manager/employer and the occupant/employee because of the disparity between expectations and actual events. This conflict may have constructive or destructive effects, depending upon how it is handled (Kreitner 1979). Should the manager attempt to deny or avoid it, the situation inevitably will worsen; it will improve if the conflict is confronted directly and the focus is kept on issues rather than personalities (Leavitt et al. 1973).

Accordingly, in order to resolve conflict resulting from an IAQ problem, the manager must identify the problem early and develop alternative solutions. This may be easier said than done because the first inkling that an IAQ problem may exist is an increased number of employee complaints, which usually are non-specific (e.g., malaise, burning of the eyes, upper respiratory problems). In and of themselves, these symptoms may suggest but do not necessarily confirm that SBS exists. The implications obviously would be different for an office building than for a medical or research laboratory building. In the latter, for example, the complaints may result from poor laboratory procedures (e.g., improper or inconsistent use of a fume hood when handling volatile organic compounds).

When confronted with an IAQ problem, a manager not only may not be able to identify it as a crisis situation but also may not know where to turn for competent assistance. Managers often are required to turn to in-house experts who also may not totally understand the causes or required corrections for SBS or BAI. Should outside consultations be required, there obviously would be further delay in identifying the crisis or developing alternative solutions. Those delays and the coincident pressure for speedy action from the occupant/employee elevate the level of frustration experienced by the manager. Further, the conflict, uncertainty, and vagueness surrounding the crisis often result in anxiety and the need for more control by the manager (Meyers and Holusha 1986).

To some extent, the awareness of whether crises are managed successfully depends upon the viewpoint of the observer. The perception of the manager/employer may be quite different from that of the occupant/employee and, because perception is tantamount to reality, perceived "foot-dragging" or mismanagement may cause increased frustration and anxiety and decreased performance of the employees (Fink 1986). For conflict resolution to be successful, it is essential that occupants/employees and managers/employers work together and cooperate toward common goals or purposes and not be adversarial (Gold 1986).

That is, in dealing with crises, the manager must interact effectively with both subordinates and higher authority. In so doing, the manager must be able to maintain a successful balance between sensitivity to the needs and concerns of the occupants/employees and credibility with higher authority regarding the crisis. Further, to be effective, the manager must

be able to accept crisis as a normal, but unpleasant, occurrence (Meyers and Holusha 1986) and the notion that "stopgap" measures, although expensive, usually are necessary during the resolution of the crisis. Equally important is the fact that those issues must be clearly communicated to all constituencies.

IMPORTANCE OF OPEN COMMUNICATIONS

Because people rely upon the media for information for decision-making, explaining what is going on, or adding structure to a situation, it is essential that uncertainty be minimized by opening and maintaining clear, regular, and open communications with all constituencies (i.e., employees, higher authority, public). This, at the minimum, involves regular meetings and timely updates. Inability to provide timely reports often results in rumors, which may not only give the wrong impression of the situation, but also interfere with resolution of the problem (Koenig 1985).

Media representatives often complain that management is not completely truthful regarding events, provide either delayed or no responses to inquiries, talk to the press only in good times, or provide distorted (i.e., usually favoring the organization) information. Administrators, on the other hand, complain that coverage is shallow, superficial, sensational, or deliberately destructive. Obviously, the best way to mitigate these differences is to provide effective communications with constituencies. This requires that the manager be aware of the concern of and develop an ongoing dialogue with others, think politically, and overcome natural aloofness and protectiveness.

Organizations must recognize that the public is interested in their problems and select spokespeople who are knowledgeable of the problem and who will be precise, factual, and unbiased in their presentations (Pinsdorf 1987). In some states, agencies are required to conduct all public business in the "sunshine." In those instances, administrators are faced with managing crises, including solving IAQ problems, in a veritable "fishbowl" where every action (and inaction) is subject to immediate scrutiny (and second guessing). Further, when dealing with an issue such as SBS, which is characterized by vague and nonspecific symptoms and varied causes, it is particularly difficult to communicate the impression that progress is being made in problem resolution. Nonetheless, in those situations where operating in the "sunshine" is a statutory requirement, administrators should consider this as an important advantage in communicating with all levels (i.e., employees, higher authority, the public).

Decision-making requires hard information and appearances—whether accurate or misleading—can be decisive regarding the outcomes (Pinsdorf 1987). An administrator/manager who continually strives to prevent an increase in or reduce frustration in employees will promote improved performance and interactions between employer/employee relations. Conversely, any delay in identifying and solving IAQ problems may cause employee frustration, which inevitably will lead to anger and may decrease productivity, but increase turnover, absenteeism, tardiness, and accidents. One of the main attributes a manager must possess is an ability to communicate well with others and motivate them to achieve goals (Dyer 1978).

CONCLUSIONS AND RECOMMENDATIONS

Because some organizations appear to be more crisis-prone than others, it has been recommended that a crisis capability audit be performed, preferably by an outsider. That audit is designed to provide information regarding how well an agency can detect, manage, and benefit from a crisis. The result is an institutional approach to potential problems that follows a predetermined plan (Meyers and Holusha 1986).

Irrespective of whether a crisis capability audit has been performed, when crisis warnings are detected it is essential that intervention be instituted as soon as possible (Fink 1986). Perhaps the most important factor is the naming of a manager who will be the main source of information and instructions. This individual must be sensitive to and understand early warning signals and pinpoint the problem (Slatter 1984) as well as work for consensus, develop an action plan, and initiate remedial actions (Andriole 1985).

Some managers find it difficult to deal with public agencies because crises that affect the public often bring increased scrutiny (Meyers and Holusha 1986). Nonetheless, it is imperative that contacts be made with all constituencies. This requires that an articulate media spokesperson who is thoroughly familiar with the problem be appointed as soon as practicable (Pinsdorf 1987). All relevant information describing the problem should be made available to the employees/occupants and the public and updated on a regular basis.

Above all, the problem should be remedied as soon as possible because delay may damage the organization's reputation (Meyers and Holusha 1986) and possibly the manager's health. By exercising control and a proactive approach, the manager will significantly decrease the potential for stress and increase the likelihood that goals are achieved (Broussine and Guerrier 1983).

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DISCUSSION

James V. Dirkes II, University of Michigan, Ann Arbor, MI: Even though I agree that good communication and prompt response are desirable, it seems that indoor air quality issues often don't have clear causes. Thus they don't have clear solutions which can be acted on with a high degree of confidence. Please comment on this.

E.L. Besch, College of Veterinary Medicine, University of Florida, Gainesville, FL: Your comments grasp the essence of my presentation. I agree that IAQ problems often have unclear causes and unclear solutions and, as a consequence, may constitute crises (i.e., they are turning points for better or worse or, in other words, they are situations that have reached a critical phase) and should be managed as such. IAQ problem management is difficult because of the need for instant expertise in matters that are not well understood. Strategies to correct the problem are often stopgap, expensive, and unsuccessful. Nonetheless, they should be implemented as soon as possible and communicated to all concerned to prevent the perception that managers are not responding to the concerns of the occupants/employees. Further, crises that are unmanaged or perceived to be unmanaged result in consequences on building occupants/employees (e.g., non-performance, denial, anger, frustration) that are equally important but separate from those relating to the IAQ problem per se (e.g., eye irritation, upper respiratory problems, headache, lethargy).