

# **Boston Public Schools Green Cleaners Project Pilot Program Assessment**

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**CONTESTED ILLNESSES RESEARCH PROJECT**  
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## **Executive Summary**

In the fall of 2003, the Boston Urban Asthma Coalition (BUAC) and the Massachusetts Coalition for Occupational Safety and Health (MassCOSH) launched the Healthy Boston Schools Project to test cleaning products currently in use in Boston schools and to recommend substitution of some products with more environmentally-friendly formulations, or so-called green cleaners. Initiated in cooperation with labor unions and several school and community-based partners and with funding from the University of Massachusetts Lowell, Toxics Use Reduction Institute (TURI), the project engaged custodians in pilot “green” cleaning products in four schools, bringing together a team from the custodial union, the school department management, and the coalitions to monitor the efficacy of the products and offer recommendations.

The success of the project led to an agreement with the Boston School Department to adopt a policy requiring all vendors to bid products that meet the Green Seal 37 health and safety environment criteria by March 2006. It also led to the establishment of a subcommittee of the city-wide Healthy Schools Taskforce that would provide an ongoing mechanism for reviewing cleaning products and building maintenance issues.

The following is a summary the findings from an evaluation conducted by the Contested Illnesses Research Group of Brown University’s Department of Sociology which notes some important lessons learned from this effort and proposes some next steps needed to expand the program both locally and statewide.

### ***What was involved***

A Green Cleaners Pilot Team (comprising representatives from labor unions, school department management, and BUAC) reviewed product specifications for 17 cleaning products used in the Boston schools for their potential health and environmental impacts. Nine of the 17 products currently in use in Boston schools were identified as candidates for substitution with a safer alternative. The project team developed a plan for a short-term trial substitution of these products in four pilot schools with "greener" alternatives, with the ultimate goal of implementing a district-wide shift to environmentally preferable products by FY06.

In the summer of 2004, custodians working in these schools received training in the proper use of these chemicals. The Team monitored the pilot program to gauge product efficacy and to make recommendations concerning the further use of green cleaning products.

### ***Findings***

This project is a model program that has successfully integrated the concerns of a wide variety of stakeholders: school administrators, labor union representatives, employees, parents, and community health advocates. The citywide Healthy Schools Taskforce already embraced the opinions and viewpoints of many of these key stakeholders. By using the Taskforce as the launching pad for the examination of cleaning products, the Green Cleaners pilot team wisely found a way to incorporate the concerns of key stakeholders in drafting a new policy that

addressed a specific issue of school environmental quality. By inviting other parties (such as labor unions) to join the Green Cleaners initiative, they ensured representation of employee opinion in the design of the new policy. What began as a specific project to review cleaning chemicals thus successfully integrated the interests and concerns of existing partners on the Healthy Schools taskforce, while welcoming the concerns of additional parties, who are now inclined to continue partnering on future Healthy Schools initiatives.

In the process of discussing the shift to green cleaning products, the pilot committee learned some important lessons that may be useful to others hoping to promote similar changes in their districts.

- First was the importance of maintaining a clear and coherent message about the health benefits of a toxics reduction orientation, even in the absence of quantitative data linking specific cleaning products to specific health outcomes (e.g., asthma). Although useful in prodding the committee to action, framing the green cleaner intervention project around the specific health problem of asthma may have inadvertently created some difficulties in getting all parties to agree to a common set of goals and evaluation criteria and may have drawn attention to the lack of quantitative data to prove impacts on health outcomes. The green cleaners proponents learned that candid and frequent discussion of how short-term projects relate to overall long-term strategies is important, so that short-term projects (e.g., substitution of green cleaning chemicals) are evaluated and assessed with an understanding of how they are relevant to longer-term goals (e.g., overall school environmental quality) and do not break apart because of differences in performance and evaluation criteria.
- Second was the importance of stakeholder involvement. Although this program was notable for how it incorporated the viewpoints of many different parties, there were some parties who were not involved. For example, the food service personnel who are responsible for cleaning school kitchens and cafeterias were not involved in this process. These workers are represented by their own union, and a separate purchasing group orders cleaning supplies for use in their areas. Optimally, the food service workers should be invited to participate in the green cleaners project so that they, too, could shift to safer cleaning products, or at least be aware that multiple products are in use and that they should not be combined. Similarly, although parents have been actively involved in the Healthy Schools taskforce, they have had less involvement with the green cleaners pilot project in individual schools. Getting parents involved in the promotion of use of green cleaners in schools is a potential way to strengthen parental involvement in issues concerning school health and will also alert them to possible health hazards of cleaning products they use in their own homes.
- Third, the Green Cleaners project team occasionally encountered obstacles that arose from conflicting definitions or assessments of the problem and from differing perspectives about the appropriate extent of stakeholder involvement in the decision-making process. For example, in this project the stakeholders had an early disagreement over whether replacement cleaning products should be Green Seal certified specifically, or whether a third-party assessment of whether they met Green Seal criteria would

suffice. In the context of this project, however, the stakeholders were frequently able to reconcile these disagreements via conversations within the Green Cleaners project team of the citywide Healthy Schools Taskforce. Having a committee structure in place gave all of the stakeholders opportunity to voice concerns. The additional resources provided by the coalition members in the taskforce created more impetus to change and provided technical assistance an overburdened school department needed to implement changes in policies and maintenance procedures. It also prevented one party from dominating discussions or driving the decision-making process in a strict top-down fashion. Optimally, a city-wide taskforce can give all stakeholders an opportunity to help define the school environmental health problems and formulate goals and objectives for remediating problems and what standards should be used to evaluate the success of the program.

The Green Cleaners team hopes to build on the success of this project both locally and statewide in the following ways:

- Subsequent work by the Green Cleaners subcommittee of the Healthy Schools taskforce should seek to involve the food service workers union and their school administrative counterparts.
- Additional outreach and education with teachers and other school employees is needed to instruct people about school environmental quality, steps being taken to mitigate environmental problems, and to mitigate the problem of unapproved product use within the schools.
- A legislative briefing is being planned to use the green cleaners story as a case study example in lobbying for passage of the Safer Cleaning Products bill, which is designed to reduce asthma and other health threats from emissions of toxic chemicals from cleaning products used in schools, hospitals and other health care facilities, day care centers, public buildings, and public housing.
- The Green Cleaners team hopes to work more closely with the Mayor's Green Building taskforce, which is working to implement LEED standards citywide. To date, this group has been focused principally on housing issues, but the Green Cleaners project team members are hoping to ensure that issues of school health (both in design and maintenance) are represented.

This report demonstrates how a coordinated effort by various stakeholders can have a significant impact on school environmental quality. The existence of the citywide Healthy Schools taskforce provided a venue from which concerned parties could work on specific issues relating to school environmental quality, while retaining significant worker and community involvement.

## Introduction

Would you know a clean toilet if you saw one?

In September 2003, the Boston Urban Asthma Coalition (BUAC), in cooperation with labor unions and several school and community-based partners, launched the Healthy Boston Schools Project. As part of this project, the committee worked to substitute some of the cleaning products currently in use in Boston schools with more environmentally-friendly formulations, or so-called green cleaners. One of the products selected for substitution was the toilet bowl cleaner. Early feedback from custodians and teachers in some of the schools piloting the new cleaning products was mixed. Some people expressed dismay that the new product did not leave the water in the toilet bowl blue, and there was no discernable odor to the product. Although there is no particular reason to expect that a green cleaner would leave a toilet blue, people have, over time, come to associate the blue water in the toilets with a state of cleanliness. With no visual cue to rely upon, it raises a question in people's minds (both custodians and other people who use the facilities) as to whether or not the product has been applied properly or has performed similarly, and whether or not the toilet has been cleaned. As one custodian explained in exasperation, "You know, if they don't see that blue, you can talk 'til you're blue in the face, so to speak."

In conjunction with this project, BUAC asked the Contested Illnesses Research Group at Brown University's Department of Sociology to conduct a qualitative process evaluation. The Contested Illnesses Research Group has experience in working with and evaluating partnerships of labor and environmental organizations, and was therefore prepared to take on this task. Two Sociology doctoral students (one with an MA in Sociology and another with an MPH in epidemiology and social and behavioral science) and one faculty member met with Tolle Graham, Massachusetts Committee on Occupational Safety and Health (MassCOSH) director, to design an evaluation that would be centered on the needs of Mass COSH, BUAC, and their partners. Studying the early stages of the Green Cleaners Pilot Team and the efforts of the Healthy Boston Schools citywide taskforce as they unfold will assist in future efforts to involve workers, management, and members of the community cooperatively in healthy school campaigns.

Members from the Contested Illness Research Group have conducted interviews with key members from the Green Cleaners Pilot Team and with principals, teachers, and custodians working in the pilot schools. This program is especially timely given the recent decision by the Boston Public Schools Department of Facilities Management to shift all schools in the system to green cleaners by March of 2006. Although there are some technical issues still to be resolved in crafting and executing the new policy, this report summarizes the current situation, what was learned from the interviews with project team members, and makes recommendations for wider program implementation.

## Background

From its inception BUAC had been organized around three working groups: one that deals with housing issues, one that addresses issues concerning access to care, and one that targets asthma-related issues in schools. The BUAC Healthy Schools Committee comprises parents, teachers, and school department employees, and has developed a healthy schools platform that addresses conditions that may trigger asthma attacks, including building maintenance. One of the items on the healthy schools platform identified the selection of cleaning chemicals as a potential issue and set a specific goal of urging the School Department to shift to safer and healthier cleaning products. For a number of the project participants, then, the main motivation in founding the Healthy Boston Schools citywide task force (from which the green cleaners project originated) was to address the pressing issues of childhood asthma and its connection to school environmental quality among students in Boston's public schools.

Some of the members of the BUAC Healthy Schools Committee are also involved in the statewide Healthy Schools Network. These city- and statewide initiatives are a part of a national program to develop and promote change for healthier school environments. The Healthy Schools Network acts as both an advocacy organization and a clearinghouse for models and approaches to reducing environmental health hazards in schools across the country. In this regional initiative to improve overall school environmental quality, the city of Boston is joining other urban school systems (e.g., Chicago, Seattle, Pittsburgh) and state educational departments (e.g., Minnesota, Vermont) that are making a shift to green cleaning chemicals as part of an integrated healthy schools program (Center for Health, Environment, and Justice; CHEJ 2002). If the effort to shift the Boston school system to green cleaners is successful, the lessons learned here may be useful in developing an action plan that other school districts statewide may follow to implement green cleaners programs.

Asthma is a common chronic illness among schoolchildren in the city of Boston and is the leading cause of hospitalizations among children nationwide (American Lung Association 2004). Nationwide, asthma accounts for an average of 14 million missed school days each year and results in some \$9 billion dollars in health care costs (American Lung Association 2004). A recent survey of school health records in Massachusetts found that 9.2% of the children reported having asthma (Knorr et al. 2004). Asthma rates in the Northeast are higher than the national average, and within the state (Bloom et al. 2003), this burden is borne disproportionately by minority communities. The highest hospitalization rates for asthma in children under age 5 are found in the neighborhoods (Roxbury, North Dorchester, Jamaica Plain, Fenway, Mattapan, and South Dorchester) with the highest percentage of black and Latino children (Kahn and Pradhan 2003).

Indoor air quality is a key factor in exacerbation of asthma (Shendell 2004). Poor indoor air quality has been shown to adversely affect performance and attendance in schools by causing ill health effects, including asthma (Mendell and Heath 2005). School environments contain numerous toxins that may accumulate in indoor air, such as carpet glues, wood preservatives, mold, heating system emission, and vapors from cleaning products. Low-level exposure to these substances may trigger immediate reactions in some students, or may cause a range of more subtle long-term health and cognitive problems (CHEJ 2002).

Whereas most public health interventions that address childhood asthma focus on treatment and management of the disease, health advocacy groups and environmental organizations in Boston are working to find ways of eliminating both the causes and triggers of asthma. This prevention-oriented philosophy is the core approach of the Alliance for a Healthy Tomorrow (Alliance), a statewide coalition of community, environmental, and labor organizations to which many of the members of the Green Cleaning Pilot Team belong. The Alliance seeks to protect human health and the environment in Massachusetts by creating proactive state policies to prevent harm before any damage is done. The Alliance currently has three pieces of legislation under consideration in the state legislature that would create preventive mechanisms for finding safer alternatives to the use of hazardous substances. One of these bills, the Safer Cleaning Products Bill, is designed to reduce asthma and other health threats from emissions of toxic chemicals from cleaning products used in schools, hospitals and other health care facilities, day care centers, public buildings, and public housing. Hence, the Healthy Boston Schools project is working to address important matters of statewide concern.

Exposure to hazardous cleaning products in Boston's schools is a concern for staff, students, parents, and teachers. In a survey of health care workers in four states, including Massachusetts, the most commonly reported occupational exposure linked to asthma was to cleaning products (Pechter et al. 2005). General cleaning products contain certain ammonium compounds, which are used as disinfectants and are regulated by the Environmental Protection Agency (EPA), as antimicrobial pesticides. Several of these compounds are recognized asthmagens (Bernstein 1994, Ouhouh et al. 2000). However, the data linking cleaning products directly to elevated asthma rates remains sparse (Rosenman et al. 2003), and studies tend to recommend secondary measures of prevention such as ventilation, warning labels, and workplace training. Relying solely on these measures places the staff and student populations in schools at a continued risk of asthma causation and exacerbation. In addition, the majority of studies on exposures to cleaning products focuses on adult occupational exposures. Children exposed to such hazardous products may in fact be more at risk than adults. Recent research has demonstrated that children are potentially more susceptible to toxic chemical hazards due to their vulnerability in critical stages of development, certain behaviors associated with youth, and key physiological differences in comparison to adults (Makri, Goveia, Balbus, and Parkin 2004; CHEJ 2002). The vulnerability of children's health to potential toxic exposures increases the importance of finding alternatives to current cleaning practices in Boston's public schools. Preventive approaches to eliminating toxic risks, such as the Safer Cleaning Products Bill, are designed take precautionary action without waiting for occupational and environmental health science to demonstrate a clear link between exposures and negative health effects in both adults and children. The Green Cleaning Pilot Project is an applied example of the potential for protecting students, staff, and teachers contained in the Safer Cleaning Products Bill.

### ***The Green Cleaners Project Team***

In 2003, BUAC received a grant from the Toxics Use Reduction Institute (TURI) to launch the Healthy Boston Schools Project. This partnership brings together representatives from the Massachusetts Committee on Occupational Safety and Health (MassCOSH), the Boston Urban Asthma Coalition (BUAC), the Boston Public Schools Department of Facilities Management, the Boston school custodian's association, and the Boston Public Health Commission.



As one of their first initiatives, the Healthy Boston Schools Green Cleaners Pilot Team reviewed the Material Safety Data Sheets (MSDS<sup>1</sup>) for 17 cleaning products used in the Boston schools for everything from general cleaning to floor care to graffiti removal. With technical assistance from toxicologists at the Surface Solutions Laboratory at the University of Massachusetts, the state's Toxic Use Reduction Institute, and the Boston Public Health Commission, these cleaning agents were screened for their potential health and environmental impacts. Products were compared to the minimum standards set by the Massachusetts Operational Services Division Environmentally Preferable Products (EPP) criteria (which are, in turn, based on the nationwide Green Seal standard for industrial and institutional cleaners). Nine of the 17 products currently in use in Boston schools earned a rating greater than two in this review (i.e., they are classified as carcinogenic, teratogenic, asthmagenic, corrosive, or volatile ) and were identified as candidates for substitution with a safer alternative.<sup>2</sup>

The project team developed a pilot plan for the substitution of these products with “greener” alternatives (i.e., ones that meet Green Seal or EPP standards), with the ultimate goal of implementing a district-wide shift to environmentally preferable products by FY06. To pilot test greener chemicals and evaluate their performance, four schools were selected on the basis of the following criteria: if the student populations had a high asthma rate, if they were not currently equipped with dispensing systems for cleaning products, and if the custodial staff were judged to be open to pilot trial of new cleaning products. Although the selection process did not specifically target facilities on the basis of age or particular building materials, it has fortunately happened that two of the buildings are older (from the late 19<sup>th</sup> and early 20<sup>th</sup> century) and two were built more recently (in the 1950s and 1970s), and that there is a fairly broad representation of building materials in them (e.g., marble, terrazzo, tile, hardwood). Two of the pilot schools are elementary schools and two are middle schools, thus enhancing the applicability of findings to a broad range of children at various age levels and grades.

In the summer of 2004, custodians working in these schools received training in the proper use of these chemicals. A Green Cleaners Pilot Team (comprising representatives from labor unions, school department management, and BUAC) is monitoring the pilot program to gauge product efficacy and to make recommendations concerning the further use of green cleaning products. This evaluation includes a quantitative analysis of a paper-and-pencil survey administered to custodians in the pilot schools to gauge the performance of the substitute products and custodial satisfaction.

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<sup>1</sup> A form that provides information on the chemical's identity; physical and chemical characteristics; physical and health hazards; primary routes of entry; exposure limits; whether the chemical is a carcinogen; precautions for safe handling and use; control measures; emergency and first aid procedures; the date of preparation of the MSDS or the last change to it; and the name, address, and telephone number of the manufacturer, importer, or employer distributing the MSDS; the Occupational Safety and Health Administration requires employers to provide MSDSs to employees for all chemicals they come in contact with in normal execution of their jobs. [Sources: Northwestern University Office of Research Safety website, available at <http://www.northwestern.edu/research-safety/hazcomm/append-a.htm> (accessed March 15, 2005); Occupational Safety and Health Association guidelines 29 CFR 1900.1200.]

<sup>2</sup> Carcinogenic: capable of causing cancer; teratogenic: capable of causing structural developmental defects in the formation of individual organs; asthmagenic: capable of triggers an asthma attack; corrosive: capable of destroying or eating away by chemical action; volatile: a chemical agent that evaporates, or can get into the air easily at room temperature.

MassCOSH is working with the Boston school department through the statewide Healthy Schools Network to establish local (i.e., school-based or cluster-based) environmental committees in accordance with the EPA's Tools for Schools model to monitor school environmental quality and identify any concerns that arise. Tools for Schools is part of the EPA's Healthy School Environments initiative, and shows schools how to develop a practical implementation plan to improve indoor air quality problems, at little or no cost. The EPA's Tools for Schools kit includes checklists and other evaluation tools to assist schools in diagnosing and prioritizing indoor air quality problems, along with sample policies and memos. Environmental committees established under the Tools for Schools programs may include participation by principals, teachers, parents, custodians, students, and parents. One of the first steps in forming an environmental committee is to conduct a local needs assessment to inventory any environmental problems found at the school. Because of these factors, environmental committees address a wide range of problems and issues, and no two environmental committees will be alike with respect to membership, goals identified, or actions taken. To date, 20 of the 139 schools in the Boston public school system have such environmental committees in place, including one of the four schools involved in the green cleaners pilot program.

An ultimate goal of this project's team leaders is to establish a standing Green Cleaners committee within the citywide Healthy Schools taskforce, staffed with labor and management representatives, which will periodically review use of cleaning chemicals in schools.

## **Methods**

In conjunction with the work being executed under the TURI grant, BUAC has asked the Brown University Contested Illnesses Research Group to conduct a qualitative process evaluation. The Brown team has received funding from the National Science Foundation to investigate the formation of coalitions between labor and environmental groups around issues of occupational and environmental health, and has experience in helping other groups with process evaluation and with qualitative research on environmental health projects. The Brown team conducted this evaluation at no cost to BUAC and the other partners on the grant, in keeping with the tradition of community service work performed under this NSF grant and other recent projects.

Twelve semi-structured interviews were conducted between November 2004 and February 2005 with members of the Green Cleaners Pilot Team and with custodians and principals at the pilot schools. Questions covered the origins of the project, information on the rationale for the establishment of the pilot project, expectations for evaluating the program's overall effectiveness, custodial satisfaction, and the cooperative dynamics and challenges that coalition members has thus far experienced. Interviews ranged from 45 to 60 minutes in length.

Informed consent was obtained prior to conducting all interviews. The subject recruitment procedure was reviewed and approved by the Brown University Office of Research Administration.

### ***Coding and Analysis***

A list of codes was developed beginning with the major themes addressed in the interview schedule. This list of codes gradually evolved to include themes related to include additional topics and issues that arose spontaneously during conversations with project participants.

### ***Dissemination of Project Findings***

Major findings from these interviews are summarized in this draft report. The Brown team invites comments on this report from all parties involved in this project, in order that it best reflects the perspectives and needs of all involved parties. Those comments will be used in producing a final draft. In addition to those comments, we will expressly seek feedback from the major project participants (i.e., MassCOSHS director, BUAC director, custodians' association president, and School Department's facilities management division) by scheduling focused interviews that will elicit their impressions of the draft report.

## Results

This section will review the major findings, recommendations, and conclusions from the interviews conducted with the members of the Green Cleaners Project team and custodians and principals at the pilot schools.

Several committee members stated that they perceived the use of hazardous cleaning chemicals in schools to be “low-hanging fruit,” that is, a problem that would be easy to identify, easy to reach agreement on, and easy to solve. By focusing initially on the substitution of greener cleaning chemicals, the Green Cleaners Project team sought to create a common framework integrating the concerns of custodians, teachers, students, and parents around school-based environmental health issues. Project organizers hoped that by invoking a high-profile environmental health issue such as asthma, it would be possible to unify the disparate interests and agendas of diverse groups, such as labor, management, environmental groups, and community organizations. Just as they have worked diligently to get stakeholders to recognize a wide range of asthma triggers, project organizers have used asthma as a trigger, or metaphor, for broader discussions of problems of school environmental quality.

In practice, however, this agreement has sometimes been difficult to maintain, due to three specific challenges that we have identified: the difficulty of maintaining a central health message, the fragmentation of stakeholder relations in school issues, and ensuring adequate opportunities for participation and smooth communication among stakeholders.

### ***Maintaining a Central and Comprehensive Health Message***

Interview responses suggest that many committee members espouse a limited definition of what constitutes environmental health or environmental problems in schools. Immediate responses to an open-ended question about environmental health in schools focused primarily on descriptions of specific hazards such as asbestos, or more general problems such as indoor air quality, but few participants spontaneously identified cleaning products as a potential health hazard, or articulated a link between cleaning products and indoor air quality. Though asthmatics in the schools may make the link between poor indoor air quality and their own symptoms, even they may not always recognize the specific link between cleaning products and indoor air quality. This suggests that extra effort may be needed to communicate the importance of cleaning products as a contributing factor in negative health outcomes, both to those who influence school policies about building maintenance and those who implement the policies. In any case, many members of the project team have long tenures with the Boston school system, and several members of the committee frankly acknowledged that although they harbor some concerns about the cleaning products currently in use, they truly believed that these products were a major improvement over products used in the past.

In this case, the project leaders focused principally on the health outcome of asthma as the rationale for shifting to green cleaning products. This may have caused two sorts of difficulties. First, as reviewed earlier, while quantitative data linking cleaning products to asthma are sparse, data that link green cleaners to improved outcomes are even more sparse. Because there are

many different things that can trigger asthma, much of the research shows that remediating only one thing is rarely sufficient to improve health outcomes and that a more holistic approach is needed. Framing the green cleaner intervention project around the specific health problem of asthma may have inadvertently created some difficulties in getting all parties to agree to a common set of goals and evaluation criteria and drawn attention to the lack of quantitative data to prove impacts on health outcomes. Several members of the project team said that they thought the ultimate decision about whether or not the school system should shift to green cleaners should be made on the basis of whether or not data showed an actual improvement in health outcomes among students in the pilot schools. As one member of the team stated, “the data on whether green cleaners is less stress on health ... they haven’t really proven to me that that the other products are a problem. I wish they would give me a case-control study using ... traditional cleaning supplies versus green cleaning supplies [but the] data isn’t there. So absent that, I think cost effectiveness is the most important criteria.”

Second, not only are quantitative data linking cleaning products to asthma outcomes hard to come by, but qualitative data about cleaning products and child asthma may be even more difficult to come by. One of the women organizing the project noted that she herself has asthma, and notices that, “when they clean the common areas here [her office], especially when they mop the floor, that I can’t walk out in the hallway; it triggers my own asthma.” But although she herself is acutely aware that cleaning products may be asthma triggers, she acknowledges that people who don’t themselves have asthma may not recognize this link, saying:

Project Participant: I can’t say we ever had a call from parents and, you know, having asthma myself, unless you’re there, you know, I don’t know if parents know and kids may not connect it.

Interviewer: OK. Good point.

Project Participant: So, um, they just know they go to school, and their child comes home sick. And they don’t know exactly what it is.

Interviewer: And the kid probably doesn’t recognize it’s the cleaning thing.

Project Participant: Right.

Several of the project participants thus believed that the green cleaners substitution project had been undertaken to address a specific health condition, i.e., asthma, despite repeated cautions from other members of the project team that the project did not include monitoring for a decline in asthma incidence, and was thus not designed to determine whether the substitution of green cleaning products had a measurable effect on student and staff health. A better strategy may have been to frame the discussion from the outset in terms of precaution and toxics reduction; in this case, the project leaders had done so, but given that several members of the committee believed that the goal was narrowly focused on asthma, this highlights the need for early and sustained discussion of the benefits of toxics reduction. Moreover, given the problem in collecting quantitative data to prove changes in health impacts or qualitative data to assess children’s perceptions of changes, this may be all the more reason to take a more precautionary approach to improving overall school health. Such a precautionary approach could establish ideal goals for eliminating potential exposures based on an agreement to protect the health of children and school staff, rather than devolving to a cost-benefit analysis. All too often, early warning signs of impending health crises are ignored and lessons are learned too late for preventive action to be taken. Although the science linking poor school performance and absenteeism to exposure to

toxic cleaning products may be weak, under a precautionary framework even the presumed threat to children's health and the occupational health of school employees (e.g., teachers, custodians, and other school personnel) would be justification for action. A sustained emphasis on precaution may have focused attention away from the lack of quantitative data to prove an impact on health outcomes, and may have broadened the discussion about discussion of other health or safety concerns associated with these products.

Finally, the project team may have encountered some difficulties in maintaining a focus on health because the project team included so many different partners who represented different constituencies. Although the two women who spearheaded the project were clear that they wanted to maintain the focus on health, the custodian association president expressed some concern about this strategy:

I said I don't want to scare people about the health risks, because I don't like scaring people about health. I mean, if it's an issue, I have no problem making it major issue, but if it's not an issue, I don't really want to scare people about it. But I think if we just explain that in the long term, these chemicals will be healthier, easy to use, you don't have to worry if you spill it on you. I mean, some of the chemicals, like the strippers, if you put it on your hand and didn't wash it off, you got a burn. Stuff like that. If you use different chemicals, you might not have to worry about that.

This attitude may have been communicated to the custodians when they were trained in using the new products. When the custodians in the pilot schools were interviewed and asked why they thought the school system had shifted to these newer cleaning products, two of them said that they recalled having been told that these products were safer or healthier for themselves and the children; the other two replied that they thought the shift had been made to save storage space or because they were cheaper. It is especially noteworthy that two who recalled the health messages also tended to have the most favorable impressions of the new products. One of these custodians has asthma himself, and said that he appreciated the new products because they did not induce wheezing, which he had experienced with the older products. He noted his satisfaction with the green cleaners, saying, "I mean, you know, if you think about the health that's gonna be involved, it's worth it. Maybe you have to put a little bit of elbow grease in, but in the long run .... I'm sure there's a lot of guys that are retired right now, with complications from these cleaning supplies, and that's what [happens if you] ... look down the line, working ten years with this chemical as opposed to working ten years with that chemical." The two custodians who believed the shift had been made for non-health considerations tended to evaluate the products more critically in terms of performance, and indicated that they thought that decisions on shifting to green cleaners should be made on the basis of cost. To the extent that the custodians were confused or unclear about the importance of health in making the shift to green cleaners, it may have colored their expectations of and evaluation criteria they applied to the product.

This demonstrates that even when all parties have a stake in creating a healthy school environment, they may all be approaching this problem from different angles, with different understandings of the scope of the problem, and different goals for remediation. More opportunities for engaged and participatory discussions of environmental quality early in the

process may help clarify the goals and positions of all stakeholders, the enumeration and prioritization of environmental problems that are identified, and the development of a comprehensive plan for addressing environmental problem that satisfies the needs and objectives of all stakeholders. Candid and frequent discussion of how short-term projects relate to overall long-term strategies is also important, so that short-term projects are evaluated and assessed with an understanding of how they are relevant to longer-term goals. In this case, for example, the partners at MassCOSH and BUAC consistently reminded other members of the team that it was unlikely that data on health outcomes would become available to prove measurable improvements in childhood asthma outcomes after switching to green cleaners, but that switching to green cleaners was one small step they could take in improving school environmental quality. The task then becomes maintaining the group's focus on the long-term overall goal of improving school environmental quality, while taking more modest "bites at the apple" through smaller-scale projects like green cleaner substitution.

### ***Fragmentation of Stakeholders in School Issues***

Creating and maintaining a healthy school environment depends upon successfully integrating the efforts of many disparate stakeholders: parents, teachers, administrators, custodians, school board members, community residents, and students (CHEJ 2002). This project has borne out some important lessons in that regard.

The custodial union sees benefits in working with groups like MassCOSH, because it provides another voice to advocate for them. The union president noted that he thinks it is likely that they will begin participating in wider efforts for healthy schools through the city-wide task force. They also see the benefits of union-to-union collaboration, insofar as groups can help one another in negotiations, although there are limits related to the relative amount of power any union has and can therefore lend to other groups. A relevant piece of history here is that in a recent round of budget negotiations, the city had proposed cutting some custodial positions and some school nurse positions. This was one of the things that initially brought the attention of the BUAC to bear on the role of custodians in maintaining school health. The custodial association president also noted that he had been frustrated in the past when the teacher's union president had made a comment to the press about the schools being dirty. "And when I talked to him, that wasn't what he meant to say, but when he put it on paper, and was talking about all the stuff on the walls and stuff, and structural, I said, well, that makes my group look bad, and we didn't appreciate that. And that's when I had the dialogue with him, where he tried to help me with the budget stuff." Collaborating on the green cleaners project has thus also built bridges between unions so that they have a relationship and can help each other in negotiations.

An interesting feature of this project has been the absence of certain stakeholders from the coalition. The custodian association shares responsibility for cleaning the school cafeteria with the food service workers, who have their own union. The two groups have independent purchasing units that purchase different cleaning products, and although the school department no longer purchases bleach for use by the custodians, the food service purchasing agent does still purchase bleach for use by the kitchen workers. Although one project team member mentioned that the kitchen workers need to meet tougher hygiene and food safety requirements (and that this may be a possible rationale for their continued use of bleach) several other members mentioned this as a potential problem, because the presence of multiple cleaning chemicals in

schools could lead to inappropriate product mixing that could seriously endanger the health of all workers. One janitor noticed that in his school, he shares a slop sink and mop buckets with the food service workers, “And sometimes they put bleach in my bucket, and I don’t know that. And it’s happened to me before, where I put, like the DA-70 [one of the older cleaning products] in.” This situation could lead to mixture of multiple cleaning chemicals that could result in very hazardous exposures for the custodian, the food service workers, and the students. Optimally, the food service workers should be invited to participate in the green cleaners project so that they, too, could shift to safer cleaning products, or at least be aware that multiple products are in use and that they should not be combined. When we asked the custodian association president about whether or not the food service workers had been invited to participate, he noted that he had made that recommendation to management, but that the food service workers are currently negotiating their contract, which takes considerable effort, and that may be the main factor for their lack of participation. This finding suggests that a major obstacle in drawing labor unions into coalitions around an environmental health issue may arise if the unions are all on different contract negotiation schedules.

A related concern raised by several members of the team concerns the difficulty of ensuring that if a decision is made to switch the custodial staff to green cleaners, it may nevertheless be difficult to eliminate the continued use of unapproved cleaning products in schools. Apart from the institutional issue of parallel purchasing decisions being made for kitchen workers and custodial staff, several committee members mentioned that teachers and other school staffers have been known to bring in cleaning products from home to clean their classrooms or work areas. Although there was no clear consensus among project participants on the likely scope of this problem, reasons for it, or how to correct it, several people noted that the continued use of commercially available cleaning products in the classroom might expose students to common asthmagens or that it might lead to inappropriate mixing of products, either of which could undermine the success of the green cleaners program. Although the teacher’s union president has been briefed on the green cleaners initiative and enthusiastically supports anything that might improve school environmental quality, more coordinated outreach and education directed at teachers may be necessary to curb this problem of unapproved product use. Two members of the project team stated that they hope the school department would provide spray bottles of the approved all-purpose green cleaner to teachers for classroom use, although school department officials indicated that this would be costly and that they have in the past been frustrated by problems of pilferage. Two of the custodians at the pilot schools stated that they have provided teachers with cleaning supplies, however, either on a routine or as-needed basis, and that teachers seem to feel comfortable asking for such supplies when needed, suggesting that, with proper education, a more *ad hoc* approach might be feasible.

Finally, in talking about who is not involved, it is important to look at parents and other community members. The Boston Urban Asthma Coalition (BUAC) trains a corps of parent advocates who have been very involved in the Healthy Schools platform and in advocating for the passage of the Safer Cleaning Products act at the state level, but they have had less involvement in the piloting of green cleaners at the individual schools involved in the pilot program (although this may be partly attributable to the fact that the pilot schools were not selected on the basis of having an environmental committee with strong parent involvement). Getting parents involved in the promotion of use of green cleaners in schools is a potential way to strengthen parental involvement in issues concerning school health and will also alert them to



possible health hazards of cleaning products they use in their own homes. Moreover, the Center for Health, Environment and Justice (CHEJ), which advocates safe schools across the nation, strongly recommend reaching out to other members of the community, as homeowners recognize that school quality has an impact on property values and can sometimes be valuable allies in campaigns for school-related issues (CHEJ 2002).

### ***Opportunities for Participation***

Project organizers had an explicit goal at the outset of this project to ensure opportunities for worker involvement in the process of evaluating and selecting new cleaning products. Optimally, all stakeholders should have opportunity to contribute to conversations about the definition of problems of school environmental health, and be able to contribute to discussions about formulating goals and objectives for remediating and evaluating success. The project team encountered some problems in coming to agreement about the terms for defining the scope of school environmental health problems and in negotiating the extent of collaborative involvement in the decision making process.

### **Difficulties in Problem Definition**

As noted earlier, the project team had some initial difficulties in drawing a frame around the specific problem of childhood asthma and there was some confusion and disagreement about the evaluation standards that should be applied. In addition, they had some difficulties coming to agreement about a number of other terms. Even seemingly simple words such as “clean” and “dirty” are problematic and beg for greater specificity.

Several members of the project team described problems associated with the school system’s aging infrastructure. Indeed, one of the pilot schools dates back to the late 1800s, and while the other schools were built more recently, all of them have a history of environmental problems associated with asbestos removal, leaky roofs, or carpeting. The school department management team expressed frustration with limited resources allocated to them for capital improvement, although they, the union representatives, and other members of the pilot team all noted that the situation has improved markedly since the 1980s, and that funds are more freely available for improvement projects now than they have been in the past. Renovations have remediated problems associated with leaky roofs, asbestos, and carpeting removal. Management and other committee members agree, however, that progress on these fronts is slower than they would like, and that in the meantime, where structural problems have remained unaddressed, they have fostered other environmental problems, such as mold or pest and rodent incursions.

Herein lies a potential problem and source of disagreement among members of the pilot committee, however. The custodial union representative notes that his members bristle at the use of the term “dirty” to describe the schools, because it is, quite literally, their job to keep the schools clean. He admits to feeling frustration, “when people walk into a building and they see like, the plaster falling down and stuff, they perceive that as being dirty, so they blame the custodian, so we should be involved to really explain what the problem is, instead. Because people just see certain things and say, oh, that’s dirt. But what’s causing that?” Finally, one of the project team leaders notes that people should be careful in describing problems of cleanliness, especially with respect to who “owns” responsibility for various types of problems, and that

people should not overlook structural or organizational factors that exacerbate such conditions. For example, “there has been a lot of shuffling around and staff reduction, too, ... I think this past year they started to put people back ... they started to build staffing a little bit more, but the year before they actually cut custodians down in the small schools. Some of the small schools didn’t have custodians for some of the key hours of the school day, so if a kid threw up, the teacher either threw something, like that kitty litter stuff on it, and they would call a floater custodian to come and clean it, or it would wait until they had their part time person after school come and clean it. And we just felt like that was a public health problem.”

It is not only perceptions of dirtiness that are problematic; perceptions of cleanliness are similarly difficult. The initial follow up survey (administered to custodians in the pilot schools approximately five months after the program was initiated) revealed some dissatisfaction among custodians with regard to the new products. Some of these concerns reflected complaints that the products did not perform as well as traditionally used products, and that the staff needed to either use more of the product than directed on the label or to apply additional exertion to achieve an equivalent result as with the prior cleaning products. Some, however, were rooted in perceptions of what constituted a familiar or recognizable sign of cleanliness. The anecdote about the blue toilet water is one such example. Ironically, several of the first follow-up surveys identified similar complaints with respect to the odor of the new products, or the lack thereof. The custodial union president noted, “I mean, you hate to say it, but the mentality is, if it doesn’t smell strong, like a [floor] stripper, it’s not doing the job. People associate a strong ammonia smell with a [floor] stripper.” He, however, expects that this objection will dissipate over time: “So they’ve just gotta get used to the product. And the more they use it, the more they’ll get used to it.”

In a similar vein, there is some controversy over the use of the term “green” in describing the newer cleaning products. Although the Green Seal is a nationally recognized standard, there are few labeling restrictions on claiming that a product is “green.” The project team had initially identified 9 of the 17 products used in schools for substitution. The school department decided that they wanted to pilot test green formulations of cleaning products from two separate vendors, and took the entire “green” line from both vendors. A potential issue arose, however, because the project team had originally agreed that green cleaners to be selected for substitution should be Green Seal certified. Of the two product lines that were selected, however, only one had a true Green Seal certification; the other had been certified to Green Seal standards but the assessment had been conducted by a third party vendor, not by Green Seal per se. Upon discovering this, one member of the project team said:

And when I was talking to this guy [name], who is pretty well known in the green cleaner environmental world, he sort of made me feel like that’s kind of a scam thing to do. So I’m actually really doubting now ... and I didn’t have, I mean this was pulled on me at the last second, and I just felt like, holy crap, they already bought the stuff, we had the training set up, I just had to say that at least they had a paper that they tested by that and [sigh] anyway. [laughs] You know how these things go. That’s why I feel like we have to, you know, it sounds simple to say Green Seal criteria, but now I’ve learned that they could send it to the lab that their cousin owns and said oh yeah, we’ve used the same test that Green Seal uses. That’s what [name] said to me, and I tend to respect his opinion, and I would want to run that by the UMass Lowell Surface Cleaning place, too.

Apart from the issue of whether or not the products meet the Green Seal specifications, this anecdote relates the importance of open communication and trust among coalition members.

## **Decision Making Processes**

Decision-making presents a significant challenge in this project, because some parties would prefer to see this as a case of top-down decision-making, whereas others would see it as bottom up and hope for greater involvement. In the words of one school department official, the discussion of shifting to green cleaning products has prompted further discussion about school environmental quality “among ourselves, which is probably where it belongs anyway.” While this may be true, it is not a given that the school department would have reviewed the use of cleaning chemicals in schools without significant prodding from the other members of the green cleaners pilot team. The custodian association president indicated that they have not in the past taken an active role in deciding what products to use, and indicated that they would use whatever products the school department provides. This was echoed by the custodians in the pilot schools, who routinely indicated that they had “no choice” in determining what products were used. Without the action and advocacy from the BUAC and MassCOSH partners, it is unlikely that such a call for a review of cleaning chemical policy would have arisen from the workforce, either. In some respects, then, the greatest success of the Green Cleaners pilot team may have been the way they fought for a significant voice for employee input and participation in the decision making process.

The evaluation of green cleaning products at the pilot schools included several types of qualitative assessment with respect to product performance and the role of cleaning products in job satisfaction. In the interviews conducted for this report, the custodians universally displayed a high degree of pride in their work, and indicated that they wanted products and equipment that would help them do a good job. Several custodians mentioned, however, that they encounter practical barriers, most notably lack of equipment or insufficient training. The evaluation of product performance that MassCOSH conducted indicated some dissatisfaction with several of the products, but upon closer inspection, it was discovered that the custodians were using the products inappropriately (e.g., at full strength when the product should have been diluted). This highlights the need for improved training so that the products will perform as expected. Problems of equipment or supply availability were also discussed. Two of the custodians in the pilot schools complained that the garbage can liners they are currently supplied with are too small for the garbage cans, and must be stretched to fit, leading to the possibility of breakage. As a stopgap measure, some custodians said they are double-bagging the trash, because proper containment of trash is critically important in an integrated pest management plan. In another example noted previously, one custodian described that sharing a mop sink with the kitchen staff could result in unsafe mixing of chemicals. He also noted that when he attended the summer training program on the green cleaners, the company’s product representative recommended “ ‘Maybe you could have three different mop buckets for three different chemicals.’ That would be great, but they don’t give it to us.” At the present time, it’s unclear how and whether this problem of equipment and supply availability will be remediated (the school department is currently running low on supplies of garbage can liners), but at least the partners on the green cleaners pilot project team have been able to highlight the need for better training and equipment availability. The draft policy on green cleaning products includes language calling for healthy and safety training on green cleaning products and safer cleaning methods to be offered to all

custodians. This attention to worker training may be considered one of the most important successes of this initiative.

## Discussion

The Green Cleaners Project Team has much to celebrate. This project has brought together a diverse group of people representing a wide number of constituencies who all hold a common interest in improving school environmental quality. It represents a very creative approach to addressing school health issues in a concrete and systematic way that will lay the groundwork for future decision making geared toward additional improvements.

The project team was also successful in linking the remediation of a local school environmental quality issue to policy decision making that is currently developing on regional and nationwide fronts. Because so many of the project team members are also active participants in the Alliance for a Healthy Tomorrow, they are well aware of school health issues and current legislative initiatives that could influence school health. Indeed, the implementation of a new school policy might increase awareness of the pending legislative initiative concerning healthy cleaning products, and might lend momentum in the Alliance's drive to enact this measure for other facilities statewide. In a similar fashion, the mayor of Boston has recently signed onto the LEED program (Leadership on Engineering and Environmental Design) principles for all city buildings. The LEED principles outline standards for environmentally conscious construction of new municipal buildings and safer maintenance of existing facilities (U.S. Green Building Council 2005). School department personnel have been briefed on LEED principles, and have astutely concluded that adopting green cleaners in the schools will serve to satisfy progress toward LEED goals.

The Boston Urban Asthma Coalition, of course, has a well-established record in linking school health, home health, and occupational health in addressing the problem of asthma, and has brought that ethos to this project team. One of the most important successes of this effort has been the active participation of multiple parties in this discussion and review of school department policy on green cleaning products. Moreover, this is a notable (and rare) example of a coalition partnership involving labor unions and environmental groups working toward a common school health concern. While the Contested Illnesses Research Team has been studying blue-green coalitions in other contexts, examples of blue-green coalition activity around school health issues are still sparse. In that respect, this case study from the Boston school is an especially important example of how custodial concerns about worker health may be incorporated into a school health agenda. Finally, even if this committee was not solely responsible for bringing about the revised policy concerning green cleaners, the work this group has done to elevate discussion of the issue was important, and the manner in which they linked it to concurrent developments on regional and statewide fronts was very important.

At the state level, Massachusetts has long been a leader in officially encouraging toxics reduction. With the passage of the Toxics Use Reduction Act in 1989, Massachusetts became a leader in the promotion of pollution prevention as a viable alternative to the use of hazardous substances. The Toxics Use Reduction Institute, set up by the passage of the Act, has been especially successful in demonstrating to state industry that the substitution of non-hazardous substances is cost-effective as well as health protective. In 1997, Massachusetts passed a rule requiring all state Executive Departments follow an Environmentally Preferable Products and Services program designed to eliminate potential environmental and health hazards in state office buildings. The

Alliance's Safer Cleaning Products Act seeks to extend the scope of the Environmentally Preferable Products and Services purchasing criteria to all public buildings, including schools and day care centers. The success of the Green Cleaners Project Team in promoting safer cleaning products in the four pilot schools demonstrates the broad base of support for such a transition to healthier products in Boston's public school system. By providing these examples of how a school's staff, teachers, and students can benefit from a reduction in potential health hazards, the Project Team is continuing Massachusetts's progressive approach to eliminating toxics in our environment.

That said, this program also highlighted some very important challenges and pitfalls that should be kept in mind when considering shifting to green cleaners. Project team leaders struggled to maintain a clear and consistent focus on health, for example. Given the difficulty of demonstrating measurable improvements in a specific health outcomes such as asthma, other school systems that are seeking to shift to green cleaners should be aware of this potential issue and might consider retaining a clear emphasis on precaution so that evaluation efforts do not become mired down in cost-benefit analyses. Future efforts to replicate this program in other settings should build in opportunities for careful and open discussion of environmental quality problems at the outset, so that all stakeholders are oriented to the problem in a common framework.

As noted, although this team had some important successes in integrating the concerns of school administrators, custodians, and environmental health groups, there were some important stakeholders who were absent from the discussions. Other school employees, such as the kitchen workers, have direct involvement with the implementation of cleaning programs in schools, and problems may arise if they are not aware of and properly trained in safe use of cleaning products. Moreover, other school employees such as teachers play an important role in compliance with green cleaners programs and should be made aware of new policies as they evolved. Finally, parents are powerful advocates for school health issues and should be briefed on the green cleaners programs so that they can advocate for healthier school policies at both local and statewide levels.

Finally, this project proves that, as always, the devil is in the details. Project team members had occasional difficulty in coming to common agreement in defining the scope of the problem, even with respect to basic concepts such as what constitutes clean or dirty, and who bears responsibility for different sorts of problems of cleanliness or dirtiness. The anecdote about the blue toilet water illustrates this problem very cogently, and clearly demonstrates the need for managing the expectations and desires of all school constituents. Parties who hope to replicate this program in other localities would also do well to observe the difficulties this team had over agreement on the Green Seal standards, and should carefully question whether substitute products are truly Green Seal compliant or have been certified by a third party. Finally, although this project successfully integrated the concerns of multiple stakeholders, there was still some controversy over the scope of the decision making process, and to what extent workers and other stakeholders would have input, or whether it would be a more top-down decision making process.

## Next Steps

Moving forward, the Green Cleaners Pilot team is looking forward to the expansion of the green cleaners product substitution program in all Boston school facilities. In addition, they have a few additional specific goals to ensure success and promote expansion of the program. They are planning a legislative briefing with State Representative Frank Smizik (D-Brookline), co-sponsor of the Alliance's Safer Cleaning Products Bill. This briefing will feature some of the stakeholders and participants from the green cleaners pilot team who will describe the toxics reduction approach and how it is being implemented in the Boston school system. Invitations will be extended to legislators, members of the Massachusetts Association of School Committees, the Massachusetts Municipal Association, and other business and community groups.

Within the Boston school system, the green cleaners project team is hoping for ongoing review of the program through the establishment of a subcommittee of the citywide Healthy Schools taskforce. Possible goals for this group to explore in the future include ways to get the city's food service employees (both the union and the food service purchasing unit) involved in the Healthy Schools task force, and begin to shift the school kitchen staff to green cleaners where appropriate. As highlighted in this report, additional training and outreach is needed with teachers and other school employees to mitigate the problem of unapproved product use. Finally, team members from BUAC and MassCOSH hope to become more involved with the Mayor's Green Building Council, which is working to implement LEED standards citywide. To date, this group has been focused principally on housing issues, but they are hoping to ensure that issues of school health (both in design and maintenance) are represented.

On wider fronts, MassCOSH has begun collaborating with school systems nationwide and with the Center for a New American Dream to broaden the scope of the discussion about use of cleaning products in schools and to encourage more school districts to shift to green cleaning products. The Center for a New American Dream helps Americans change the way they consume to protect the environment, enhance quality of life and promote social justice. Three years ago, with seed money from the U.S. Environmental Protection Agency, New American Dream established its Institutional Purchasing Program (IPP). Since then IPP has helped state and local governments, federal agencies, and other institutional buyers shift millions of dollars into products that protect the environment and human health. New American Dream has worked extensively to enable state and local governments to green their purchases, and is now turning their attention to schools. New American Dream and MassCOSH will supply technical assistance and practical advice to school districts that are trying to shift to greener products.

## List of Acronyms

BPHC	Boston Public Health Commission
BPS	Boston Public School Department
BUAC	Boston Urban Asthma Coalition
CHEJ	Center for Health, Environment, and Justice
EPA	Environmental Protection Agency
EPP	Environmentally Preferable Products
LEED	Leadership in Energy and Environmental Design
MassCOSH	Massachusetts Committee on Occupational Safety and Health
MSDS	Material Safety Data Sheets
TURI	Toxics Use Reduction Institute



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