U.S. Environmental Protection Agency

COMMUNICATING ABOUT RISK: EPA AND ASBESTOS IN SCHOOLS

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Communicating About Risk: EPA and Asbestos in Schools

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Introduction

Few environmental issues have been the subject of such divided opinions, have such an unmistakable potential for health effects, or have so much at economic stake as asbestos. Regarded as a miracle fiber for centuries, asbestos is found in many consumer products, particularly as an insulator and fire retardant in public and commercial buildings. It became a liability, however, when public attention was drawn in the 1960s to scientific studies that linked exposure to high levels of asbestos fibers to several serious, sometimes fatal diseases.

The U.S. Environmental Protection Agency became involved with asbestos in the Agency's earliest days in 1970. Under the Clean Air Act of 1970, EPA designated asbestos as a cancer-causing substance and developed regulations to protect the public from exposure to asbestos fibers during the milling and manufacturing of asbestos products and when buildings containing asbestos are demolished or renovated. Other regulatory programs, largely under the Toxic Substances Control Act and the Asbestos Hazard Emergency Response Act, have kept EPA closely involved with protecting public health from exposure to asbestos. Most recently, EPA completed a decade-long rulemaking in 1989, banning the future production of most asbestos products used in America today.

Asbestos in schools has been a subject of particular concern. Tens of thousands of schools have been built since the mid-1940s when asbestos use became popular, and most contained insulation and other asbestos-containing products to protect student safety in case of fires. As information about harmful effects became available in later years, schools were high on the list of concern by Congress and EPA. Of greatest concern was the potential for exposure of school children to fibers released in the air, often during maintenance and custodial activities, or sometimes due to damage caused by school children themselves. Early surveys showed crumbling, friable asbestos found in some classrooms, hallways, gymnasiums and cafeterias.

This paper is a review of the role that EPA communications policies and information have played in asbestos-management decisions made by school administrators and local education agencies. EPA Administrator William K. Reilly commissioned the review after becoming concerned that school officials may have

misunderstood the Agency's asbestos requirements and messages.

Communicating about environmental risk is often a complex task. Communicating about hazards where there are divided opinions on the extent of risk and the effectiveness and costs associated with control make it even more difficult.

Asbestos is a case in point. The hazards associated with asbestos, as with many environmental risks, come from exposure to the substance. If exposure is minimal, then the risk is minimal. When the substance is found almost everywhere--in thousands, if not millions of locations--then the evaluation of exposure becomes quite complex. The message is made more complex when the various alternatives proposed to minimize exposure--removal, enclosure, or encapsulation, management-in-place--are factored in. Finally, add into the equation the costs of control--the asbestos abatement industry is a $4 billion per year business. Who bears the burden of paying, these costs--businesses, industry, consumers, taxpayers?

Such issues are at the heart of the asbestos problem, along with improved science, public relations campaigns by building owners and the asbestos industry, and lawsuits from parties seeking damages that may exceed $100 billion. It is in this highly-charged atmosphere that EPA has had to communicate with a fearful public about asbestos.

A major focal-point of asbestos legislative and regulatory concern has been asbestos in schools. EPA's communications effort about asbestos, then, has focused, especially since the mid-1980s, on the nation's school officials, teachers and other employees, and parents.

Communications Review

In the summer of 1990, meetings with school officials, interactions with Congressional representatives, and a series of press reports led EPA Administrator William Reilly to be concerned that many school officials might have misunderstood EPA's asbestos requirements.

In particular, he worried that: (1) many schools might be spending large sums of money removing asbestos which could be safely managed in place; and (2) school officials

engaged in these "unnecessary" removal actions thought removal was an EPA requirement.

To get to the bottom of the issue, the Administrator asked for a comprehensive internal review of communications in the asbestos-in-schools program. He wanted to know whether schools were making "informed" decisions about asbestos management, and whether there was a need to make EPA communications in the asbestos-in-school program clearer and more consistent.

What was necessary to find out, then, was a correct understanding of what the public thinks the Agency has been saying, how possible misperceptions about our messages may have been created, how EPA might have contributed to any of these misperceptions and what steps could be taken to clarify our messages. An obvious additional benefit of this study is to take what we learned in communicating about a subject as complex and contentious as asbestos, and transfer our recommendations to improve EPA communications in other areas.

The review began in July, 1990 and was chaired by Lewis Crampton, EPA's Associate Administrator for Communications and Public Affairs. The Asbestos Communications Review Team included staff members from EPA's Offices of Policy, Planning and Evaluation; Toxic Substances; and Communications and Public Affairs. Most of the members had extensive experience in communications; some were experienced in policy and program evaluation; and several had specific experience in risk communication as well.

It was decided that several approaches would be used to examine various EPA messages to school officials and local education agencies, what these audiences had to say about EPA's asbestos policies, and how important a role EPA information played in schools' asbestos management decisions. From these approaches we sought to establish the basis for any misunderstanding about the Agency's asbestos messages.

Content Analysis. First, we wished to examine EPA's messages over time. The best approach was to analyze what the Agency has had to say about its policies--from notices in the Federal Register, testimony before Congressional committees, speeches of EPA officials, press releases, training forums with interested parties, and brochures, booklets and other guidance and

informational documents. The content analysis covered from 1970 to May 1991 and focused on asbestos in schools, particularly at how EPA presented the asbestos danger and how the Agency communicated the need for asbestos controls in schools. The analysis also dealt specifically with parental and community reaction to the asbestos issue as it examined what EPA said, or didn't say, and how the messages evolved over time, especially as legislation changed.

To a lesser extent, the content analysis also examined how some concerned organizations and their publications reflected the EPA messages--whether they supported it, opposed it, or even distorted it. And it examined how EPA dealt with negative reactions to the Agency's views of the asbestos problem. The examination also included several accounts of how reporters and others have perceived EPA's messages, as recounted in newspaper and magazine articles and editorial comment.

Outreach. A second approach was the outreach effort to dozens of organizations with constituencies affected by EPA's asbestos programs. Meetings were held to discuss asbestos communications with organizations that represented public, religious and private schools, business, insurers, and labor interests. Some organizations chose to provide opinions on asbestos communication via phone conversations rather than in meetings.

Organizations were requested to participate in the outreach activity by invitation letters that included a series of asbestos communications questions. Documents were given to review group staff members by organizations' representatives during or subsequent to the meetings in which they participated. Some individuals declined to participate in discussions due to their organizations' having minimal, if any, involvement in the asbestos-in-schools program.

Survey and Interviews. A third approach used a specially-designed survey and telephone interviews to focus on how local education agencies made decisions about asbestos. The decision process was examined and mapped, dominant information sources were identified, and other factors influencing decisions were analyzed. Of particular importance to program management, the relative importance of information from EPA in these decisions was explored. A better understanding of the major factors influencing school decisions about asbestos management options assisted the communications review

group to determine whether our current communication strategy is targeting the appropriate groups.

In addition, an examination of the primary messages local education agencies have been receiving over time from major information sources, including but not entirely limited to EPA, helped the review group determine if changes were needed in the current messages to deal with counter-balancing information from other sources and to address inconsistencies, either across sources or in EPA messages over time.

The findings in the interview/survey approach were based on several sources. First, the staff conducted in-depth interviews with 10 State AHERA (Asbestos Hazard Emergency Response Act of 1986) designees, three EPA regional asbestos coordinators, and EPA headquarters staff. Next, they conducted a telephone survey of 40 Local Education Agencies (LEAs) regarding the factors behind their choice of asbestos response actions. Lastly, they analyzed two reports prepared for EPA by outside contractors: a survey of seven states' implementation of AHERA, and a study which examined case studies of four LEAs during the pre-AHERA period.

What Did We Need to Know?

In order to respond to Administrator Reilly's charge to examine whether schools were making informed decisions about asbestos management and whether there was a need to make EPA communications clearer and more consistent, the task force concluded that it must seek to understand the role EPA information played in decision-making about managing asbestos risks. Several questions arose which could lead the review to the information it sought. The questions were organized according to various components of the often-used communications model of source, message, channel and receptor.

With regard to source, the communications review asked:

- What sources of messages about asbestos were local education agencies exposed to?
- Were the objectives and biases of those sources compatible with each other?

In looking at the actual messages transmitted by that source or sources, several questions are pertinent:

- What have been EPA's messages about asbestos?
- Were they clear and unambiguous? If EPA had several messages, were they compatible and consistent?
- Have the EPA messages been timely?

In examining the channels or medium of communication used by EPA, the questions were:

- How were EPA messages transmitted to audiences?
- Were the channels effective in reaching intended audiences?

Lastly the questions related to the receiver or audiences. These questions sought to understand how EPA information about asbestos assisted or hindered local education agencies in making asbestos management decisions:

- What were the major factors influencing school decisions about asbestos management options: How much did these factors vary and in what ways?

- Who was responsible for making decisions about school asbestos management options?

- What was the decision process they followed and what characteristics might account for significant differences in this process?

- What information sources did the audiences trust the most?

- Did audiences perceive EPA as a credible information source on asbestos?

- What effect did information from other sources (the media, interest groups) have on communication and interaction among the parties?

These questions, then, formed the backbone for the three approaches used to examine the Agency's messages and the audience's reaction and reliance on those messages, especially with regard to appropriate asbestos abatement options.

EPA's Asbestos Communications History

It is helpful to understand the dynamics among the major elements that contribute to EPA's communications about asbestos risks and managing those risks, especially as they relate to schools. The primary contributors to this dynamic, which follows a definite time-line, are:

(1) the increased Congressional concern reflected in new legislation;

(2) changing scientific evidence on asbestos and the amount of risk it presents; and

(3) an improving technical knowledge about such things as asbestos levels in buildings and the most effective ways of measuring, controlling, and abating asbestos.

While the primary focus of our communications review is an examination of the asbestos-in-schools issue, it is important to understand how these messages were received in the broader context of all communications about asbestos. The Agency's messages about asbestos in schools have not been transmitted in a vacuum. The reality has been that different legislative requirements and different EPA offices have sent messages about asbestos that appear similar but may have contained varying shades of requirements or guidance that have created some confusion or uncertainty in audiences about exactly what EPA's policy is or what guidance it offers in a particular situation. Compounding that greatly are the diverse messages about asbestos from various organizations and businesses promoting their own information about asbestos hazards or safety. The diversity of these messages created the potential for huge misunderstandings at the local level where officials were being forced to make significant financial decisions within a context of conflict and doubt about eventual outcomes.

EPA has been communicating about asbestos for some 20 years. Its messages have always shifted to reflect the evolving nature of our understanding about the substance and how to prevent unnecessary exposure to it. The easiest way to view the Agency's changing emphasis in communicating about asbestos is to divide the messages into the following three periods—corresponding to changing legislative requirements:

1970-1985:	Raising Awareness About Hazards
1985-1988:	Implementing AHERA
1988-Present	Placing Options Into Perspective

While these periods are distinct for this analysis, it must be remembered that the messages did not undergo abrupt changes. In fact, the messages are often overlapping and do not necessarily conform directly to the legislative requirements. Often the distinctions among the messages are subtle and understated.

It is certainly easier, also, to examine messages in retrospect. An important thing to remember is the evolving nature of asbestos knowledge—all parties were constantly learning and having to react to new information and requirements. Research efforts constantly bring new fact—about monitoring, about levels of exposure, about the best ways to handle the problem. Asbestos and our ability to communicate about it are not static—they are constantly bringing new information to those interested in the material, whether from business or industry, worker safety, school administrator, or public health official perspective.

The content analysis, the survey of local education agencies and the outreach efforts all assisted in confirming the evolutionary nature of the main messages. It must be remembered, too, that specific messages from certain offices—for instance, the exposure hazard message from the NESHAP office—changed little, if at all, over the entire 20-year period. But, without doubt, the factor that influenced EPA's evolving message the most, was the perception in Congress that asbestos in schools was a full-blown environmental emergency. EPA's messages became a part of the intense interplay between conflicting scientific claims about asbestos and a clear political mandate to do something about what Congress perceived to be a national emergency.

Table 1 follows this discussion and lists the EPA asbestos messages by source and period, as determined by the content analysis of pertinent legislation, regulations and guidance documents.

The First Period: Raising Awareness About Hazards (1970-1985)

The first phase, from early NESHAP rules of the Clean Air Act, through the early years of regulating asbestos under the Toxic Substances Control Act, and up to the debate leading to passage of AHERA, was a period where EPA primarily attempted to raise the public's consciousness about asbestos hazards. This raising of awareness was directed to state health and environmental agencies, building owners and operators, and particularly local education agencies.

In addition, a secondary message was that dealing with the asbestos problem was not to be seen as a federal bail-out program where the federal government would pay the costs of eliminating asbestos hazards. In this vein, much communication was directed to the building of capability at the state level to provide a training and certification capability.

The 1971 Clean Air Act listing of asbestos as a hazardous air pollutant and the ensuing 1973 rules sent a clear message that airborne asbestos fibers, if not controlled, could be a major risk to the general public. It established a "bottom line" approach to managing asbestos risks, since building owners realized that all friable asbestos materials must eventually be removed when a demolition or major renovation takes place. In fact, many building owners may have voluntarily removed asbestos materials following the 1973 rules in order to avoid possible long-term management or liability problems. Listing asbestos as a hazardous air pollutant clearly encouraged a "removal is inevitable" mindset among some building owners and school officials, and may have contributed to a mutated EPA message that removal is required, or at least desired, in all circumstances, not just during demolition and renovation cases.

Throughout the 1970s, EPA vigorously publicized enforcement cases of NESHAP violations, due in part to a belief by federal and state officials that compliance with the demolition and renovation rules was inadequate. Enforcement cases proposing large fines, prosecutions, jail terms or loss-of-standing on federal contract lists were often the subject of Agency press releases and press conferences designed to raise the visibility of NESHAP regulations and discourage future violations.

EPA's 1982 Schools Inspection & Notification regulation was intended to increase health protection by requiring identification of friable asbestos. This was expected to lead to voluntary safe working practices when dealing with these materials. Additionally, notification of building occupants and parents was meant to increase pressure on local education agencies to manage asbestos safely.

The results of this 1982 rulemaking were mixed. Compliance with the rule was very low. At best, if one disregards the mandated deadline for compliance and the notification requirement, it was estimated that fewer than 50 percent of the local education agencies complied with most aspects of the regulation. To make matters even worse, upon investigation by EPA, many inspections

that were performed were done poorly by people with little or no training.

Moreover, EPA probably contributed to a perception that removal of asbestos was the Agency's policy when penalties for violations of the Inspection and Notification rule were often eliminated if violating school officials would agree to remove the asbestos.

Whatever the shortcomings of the Inspection and Notification rule, it had a significant communications impact. The perceived threat to school children appears to have increased public awareness of asbestos hazards. EPA's 1982 rule brought the asbestos problem home to millions of parents and school officials.

Two years later, EPA and asbestos were again brought to the attention of school administrators by Congressional passage of the Asbestos School Hazard Abatement Act's loans and grants program, which directed the Agency to provide financial assistance to needy schools with the worst asbestos hazards. To school administrators and the public, the ASHAA legislation and the loans and grants could have been interpreted as an EPA funding program for general asbestos removal since most of the serious problems were best resolved by removal.

The primary guidance documents during this period, Asbestos-Containing Materials in School Buildings (Orange Book) and Guidance for Controlling Friable Asbestos-Containing Materials (Blue Book), focused mainly on hazards and health effects as well as basic practices and procedures in an attempt to make people aware of the potential threat to human health posed by asbestos. The building of a state infrastructure of qualified asbestos inspectors and abatement personnel signalled schools and others that the federal government did not intend to pay the bill to solve the asbestos problem in the United States.

The content analysis and anecdotal information collected through the outreach effort lead to the conclusion that EPA emphasized removal as the primary means of controlling asbestos risk.

The Second Period: Implementing AHERA (1985-1988)

This second phase, from the publication of the definitive guidance on asbestos in buildings—Guidance for Controlling Asbestos-Containing Materials in Buildings (Purple Book)—through the passage of AHERA and all of EPA's efforts to implement that law, was a period of intense communications activity resulting in four primary messages—all revolving around the new Congressional requirements that schools must inspect for asbestos, notify parents and occupants, develop management plans and put those plans into effect.

These messages built upon the earlier phase and expanded their scope to deal with the new AHERA requirements. Issuance of the Purple Book in 1985 was a major point of departure in the transition to more balanced treatment of the removal/management-in-place alternatives. For the first time, given new knowledge, EPA offered a new element in the asbestos message—improper removals may be an even greater hazard than if undamaged asbestos were left alone.

While many readers may have missed the new element, some did not. A reporter for The Washington Times, called the change in EPA's position a "major shift in policy." In a lengthy article appearing on August 1, 1985, the day the Purple Book was released, the reporter quoted an EPA official as saying that "If [building owners] have [asbestos] and it is in good condition, they should leave it alone and watch it for signs of deterioration."

Several activities contributed to this new emphasis in the Agency's asbestos message that would become larger in the future. First, Agency studies, including a major study of school abatement, began to suggest that removal did not always or permanently clean fibers from a building, and, in fact, could elevate asbestos levels if improperly done.

Second, new asbestos detection technology allowed researchers to better identify asbestos levels in buildings. EPA developed a new protocol as part of the AHERA program for the use of transmission electron microscopy. For the first time, asbestos was reliably identified and measured outside a manufacturing setting.

Third, a 1986 EPA air monitoring study found that prevailing levels in buildings, governed by in-place management programs, were very low, in fact, comparable to those levels found outside the buildings. This suggested that in-place management might be as effective; indeed, perhaps even more effective, in

limiting exposure to building occupants than some removals.

Next, asbestos scientists, control professionals and public health officials increasingly began to recognize and accept in-place management as an acceptable substitute for large-scale removals, based in part on EPA's research. Improvements were also being made in in-place management technologies.

Finally, anecdotal information began to grow, from the new ASHAA loan and grant program and from other sources, such as educational prublications, suggesting that unnecessary removals might be on the rise. EPA became increasingly interested in making school officials and building owners understand that in-place management was often a sound approach.

While this new emphasis was not immediately and universally heralded as a major change in the Agency's asbestos policy, the modification in the message signalled the beginning of an awareness on the part of EPA that removals of asbestos in good condition may be taking place. Too often, building officials have "panicked and rushed into" an asbestos-removal program that has caused more contamination than leaving the asbestos alone, an EPA official was quoted as saying in 1985. Increasing awareness would eventually lead the Agency to a message years later that asbestos management-in-place may often be the best abatement option. In short, the Agency was responding appropriately to new information learned in the laboratory and in the field.

But this gradual shift in program emphasis ran counter to developments that were occuring back on Capitol Hill. In Congress, sentiment ran high in late 1985 and 1986 for additional federal action on the problem of asbestos in schools. Congressional language alone played a large part in having the asbestos problem viewed as a public health crisis. The terms "hazard" and "emergency" together in the title of AHERA were a clear message to many audiences—including local school officials and parent/teacher organizations as to how Congress viewed the nature of the asbestos-in-schools risk. There were other factors as well—especially for local education agencies. Incredibly difficult timetables for EPA to set the new rules, and for local education agencies to hire contractors or train people to conduct inspections, prepare and review management plans, and then implement those plans, sent a powerful message that school officials must place this activity among their

highest priorities and increased pressures for action throughout the system.

Almost every interview and outreach conversation we conducted with local education agencies and associations representing their interests and those of teachers, maintenance and custodial workers, felt that the compressed deadlines for implementing AHERA requirements put immense pressure on school officials to act quickly and decisively. And, in many cases, the simplest and cleanest action that could be taken was removal. For a number of reasons, asbestos removal made sense to some local decision makers, notwithstanding its high initial costs.

Compounding this situation was the fact that the guidance EPA issued was often perceived as not lending itself to the type of decisions school administrators desired. They often looked to EPA to tell them simply to remove asbestos or leave it in place. EPA's guidance, originating from school officials themselves and asbestos experts, was less definitive. It was predicated on qualitative factors applied on a case-by-case basis by local decisionmakers. There were some situations which readily called for removal, for example, because the condition of the asbestos and potential for significant exposure warranted it, and there were other cases where the asbestos was in perfectly good condition and presented only a small opportunity for exposure. The vast majority of school asbestos decisions, however, may have fallen into a more nebulous middle ground where more discretion was exercised by an on-the-scene expert, trained and accredited to identify asbestos conditions and abatement procedures. This lack of certainty and definitive direction appears to have frustrated many school administrators about EPA's advisory role.

Because of the AHERA requirement for accredited persons and the complex, judgmental nature of the asbestos-assessment process, which did not lend itself to a simple EPA directive, one of the Agency's primary messages during this period, then, was that only accredited experts could make proper and informed judgments about asbestos inspection and management activities, since they best understood the hazards and appropriate control techniques.

There were several reasons for this. First, EPA's experience under the 1982 inspections rule showed that many of the inspections were poorly conducted by inadequately trained personnel. An accreditation and

certification program at the state level would correct this problem by building credibility into the inspections and recommendations, right up front. Second, Congress, through AHERA, designated that any requirement to inspect, develop management plans, or abate asbestos hazards must be completed by accredited people. Finally, the school officials, technical experts, and others serving on EPA's regulatory negotiation determined that general standards were not appropriate for such a site-by-site hazard. On-site assessment would best lead to the ultimate objective of minimizing exposure to asbestos.

The second period, then, is best characterized by the AHERA "rush to judgment" which forced difficult, costly decisions to be made in the context of emergencies and hazards. While EPA attempted to keep the asbestos-management options open in its written and oral communications with LEAs, the focus was not on removal vs. management-in-place, but on the stringent AHERA requirements and such issues as the necessity for accredited inspectors and contractors.

The Third Period: Placing Options Into Perspective (1988-Present)

This third phase, from EPA's 1988 Report to Congress on Public and Commercial Buildings, through the recent scientific debates over fiber types and sizes, up to the issuance of the "Five Facts on Asbestos in Buildings," has been a period of further examination, consolidation and balancing in order that school officials see the full array of options for managing asbestos risks.

In 1987 and early 1988, there was pressure, reminiscent of that during passage of AHERA, behind EPA and Congress to make decisions about whether an AHERA-like law should be passed for the other 700,000 public and commercial buildings in which EPA estimated asbestos is present.

While feeling this pressure, EPA was also hearing and seeing other factors. First, there were more complaints about the inordinate costs for asbestos removal and the impact of these removals on school budgets and insurance and bonds issues. There was also the growing body of information obtained by the asbestos research

effort, discussed above, that asbestos air levels in public and commercial buildings appeared to be very low.

The 1988 Report to Congress had the effect of halting Congressional movement toward passage of AHERA-type legislation for public and commercial buildings. It created a "cooling-off" period before additional legislative and regulatory action proceeded to deal with asbestos and risks. And it highlighted the fact that EPA was emphasizing its position that management of asbestos-in-place, from a public health perspective, could be preferable to removal.

Unfortunately, the 1988 Report to Congress received very little publicity in the popular press, and much of its impact may have been lost on the public. Another asbestos-related activity was taking place and receiving the publicity--extending the AHERA deadlines. It had become quite clear that some local education agencies were having severe problems meeting the original inspection, management plan and implementation deadlines.

EPA's primary actions during this period probably gave off mixed messages to the public. First, the Agency's request for additional time to examine the extent of the asbestos problem in other public and commercial buildings was seen by some as an Agency retreat from its public health position. Second, the publication of two scientific articles in 1989 and 1990 may have begun casting doubt in the public mind about the hazards of asbestos and the perceived appropriateness of EPA's asbestos policies. Certainly these articles touched off a roaring controversy in scientific and legal circles about asbestos health effects, and this debate spilled over into the asbestos-in-schools program.

In addition, EPA completed in July 1989, a decade-long rulemaking within the Office of Toxic Substances and declared a ban on almost all future uses of asbestos in American commerce. Though the ban and phase-out was taken largely as a pollution-prevention measure since safe alternatives existed, most people would naturally see the ban as reinforcing EPA's long-standing message that asbestos was hazardous.

Then, shortly after the ban and phase-out announcement, the Agency held a press conference to announce a new enforcement initiative against several major school boards and asbestos contractors for violating the NESHAP demolition and renovation rules. This too, could be seen

by some as running counter to an attempt by EPA's asbestos-in-schools program to increase visibility for managing asbestos-in-place when in good condition, rather than removing it. It offered a concrete example of an agency delivering mixed messages on the same pollutant at virtually the same time.

While EPA did not change its position about the hazards of asbestos, it certainly increased its emphasis on in-place management as the preferred alternative, as demonstrated by the 1990 publication of Managing Asbestos in Place (Green Book) and the release of the "Five Facts" testimony and open letter. The Agency's position about the hazards of asbestos, based on the current state of scientific knowledge about various asbestos-related diseases and causes has remained consistent, and is shared by all federal agencies and the National Academy of Science. EPA has, however, continued to move to clarify the asbestos management options available to school administrators by emphasizing that identifying and managing asbestos-in-place may be preferable and safer than removing asbestos in good condition.

Schools, finally, may have been less confused about AHERA requirements and EPA's policy guidance than anecdotal information suggests. One of the findings of the review describes the information obtained from the recently completed formal review of the AHERA program. Statistically valid surveys suggest that the large majority of AHERA response actions taken by schools were consistent with the Agency's management-in-place philosophy. This is true, too, of actions now scheduled in management plans.

The evaluation found that schools identified about 70 percent of the individual suspect asbestos materials covered by the evaluation (representing about 87 percent of the total quantity of material) and that most of the response actions (85 percent) taken to date by schools involve managing asbestos in place.

The evaluation also showed that implementation of important elements of the AHERA program needed to be improved. For example, about 17 percent of the inspections were classified as deficient in identifying, assessing, or quantifying all the suspect asbestos. An additional 21 percent were judged as having serious deficiencies. Further, many school maintenance and custodial workers were not receiving proper training to

prevent them from becoming engaged in unprotected and inappropriate work practices regarding asbestos.

The third period, leading to the present day, illustrates how easily messages can interfere with one another in an area as complex as asbestos risk management. The asbestos-in-schools program took forceful efforts to place asbestos management options into perspective—finally emphasizing management-in-place as the preferred option in most instances.

The evolving emphasis in EPA's messages to local officials are best illustrated in the following table:

Table 1

EPA Asbestos Messages As Determined by Content Analysis of Laws, Regulations, and Guidance Documents

Year/ Period	Source	Message
1971	EPA promulgates listing under Section 112 (National Emission Standard for Hazardous Air Pollutants (NESHAP) of the Clean Air Act	• Asbestos is a hazardous air pollutant.
1973	EPA promulgates NESHAP-Asbestos rules under Section 112 of the Clean Air Act	• Asbestos is a threat to human health, a carcinogen. • Asbestos must be removed prior to building renovations and demolitions. • Visible emissions during building renovations and demolitions are banned. • EPA must be notified of building renovations and demolitions.
1979	EPA issues Asbestos-Containing Materials in School Buildings (Orange Book) under the Toxic Substances Control Act	• Asbestos is threat to human health. • No safe level of exposure is known. • Exposure threatens school children because levels in schools are higher than other buildings; in-school exposure is added to by additional exposure in later life; in-school activities can damage asbestos, release fibers. • Removal is the abatement option of choice. • Removal of asbestos in buildings is not mandated.

1982	EPA promulgates Asbestos-In-Schools Rule under the Toxic Substances Control Act	• Schools must inspect for friable asbestos, notify parents, employees if found, and where it is. Abatement is urged, not mandated.
1983	EPA issues Guidance for Controlling Friable Asbestos-Containing Materials (Blue Book) under the Toxic Substances Control Act	• Asbestos exposure is dangerous. • No safe exposure level is known. • School children are especially at risk for same reasons given in Orange Book. • Removal, while not required, is probably the method of choice because it eliminates the problem once and for all.
1984	Congress enacts Asbestos School Hazard Abatement Act, P.L. 98-377 (ASHAA)	• Grants and loans are available to "needy" schools for asbestos abatement, strengthening message about asbestos dangers. • Because the law gave priority to funding for most dangerous situations, ASHAA funding from EPA has gone largely to removals. • An indirect message may favor asbestos removal—the Agency's emphasis on the attractiveness of removal. However, this is the only major shift from the preceding guidance. The larger message in the Purple book continued to be that removal is the only permanent solution to asbestos problems. The book repeats EPA's observations on the disadvantages of non-removals, and again does not emphasize the potential hazards associated with improperly executed removals, given the limited information at the time. While the Purple book was released before AHERA was passed, it served as the main guidance document for schools to develop their initial management plans under AHERA.

1985	EPA issues Guidance for Controlling Asbestos-Containing Materials in Buildings (Purple Book) under Toxic Substances Control Act	• New risk message points out that presence of asbestos in building does not necessarily endanger occupants if in good condition and not disturbed. • Prudent building owners should limit the exposure of occupants, though this is not required. • Asbestos levels in schools appear higher than in other buildings. • School children are at greater risk because of greater lifespan. • Management-in-place is dealt with at some length for the first time, although guidance says removal has the widest applicability, and is only permanent solution. • Abatement actions should be designed and performed by accredited persons.
1986	Congress enacts Asbestos Hazard Emergency Response Act, P.L. 99-519 (AHERA)	• Asbestos is a health threat; no minimum exposure levels are established. • Danger is emphasized by the words "Hazard" and "Emergency" in title of the law. • Due to concern about exposure, school inspections, abatement planning, and management plan implementation must meet tight deadlines. • LEA plans should be State-approved. • Purple Book remains definitive guidance until further guidance is issued by rule-making process. • EPA must establish a model contractor accreditation program for States to follow.

1987	EPA's promulgates rules under AHERA	• Schools must inspect for all asbestos in their buildings, plan for its management. • Inspection and planning must be performed by accredited personnel, contractors or consultants. • Removal is not mandated or precluded; the decision up to the LEAs.
1988	EPA issues LEA Guide under AHERA	• Again, removal is not mandated or precluded; the decision is up to the LEAs. Text describing various situations lists removal as one of only two options in three of five examples. • Operations and maintenance (management-in-place) is emphasized.
1988	EPA issues "100 Questions" Guide to schools	• Guide answers most frequently asked questions about asbestos in schools but does not address the issue of removal vs. management-in-place.
1988	EPA issues Report to Congress on Asbestos in Public and Commercial Buildings, under AHERA	• Danger of exposure is higher in schools than in other buildings. EPA will continue to concentrate attention on schools, not other buildings. • Asbestos exposure in commercial buildings is a potential hazard but needs more study. • Studies in federal building sample show low levels; comparable to outdoor levels. • Mortality projections are extremely low.

1989-90	EPA promulgates amended NESHAP-Asbestos rules under Section 112, Clean Air Act	• Asbestos is a danger to human health; a hazardous air pollutant. (Same as earlier NESHAP-Asbestos messages) • Removal requirements for renovations, demolition are reemphasized; new rules for transporting asbestos debris from demolitions/renovations are described.
1989	EPA issues ABCs of Asbestos in Schools booklet under AHERA	• Asbestos fibers can cause serious health problems, but there is much uncertainty about risk from low-level exposure. • Asbestos properly managed in place poses little risk. • AHERA rarely requires removal. • Poorly performed removals can increase risk. • LEA makes decision on whether to remove or manage-in-place.
1989	EPA promulgates Asbestos Ban rules under Toxic Substances Control Act	• Ninety-four percent of all future manufacture of asbestos products are banned over period of seven years. • Ban will reduce unreasonable risk to human health; safe substitutes are available.
1990	EPA issues "Five Facts about Asbestos" under TSCA and AHERA	• Exposure levels in public buildings, based upon available information, pose negligible risk to building occupants, although it might be higher for maintenance workers. • Management-in-place is the most desirable option to control exposure. • Removal of asbestos, if improperly done, can increase risk. • EPA does not require removal, except for demolitions and renovations.

1990	EPA issues Managing Asbestos in Place (Green Book) under AHERA	• (The risk message is based on the Five Facts). • AHERA does not require removals. • Green Book does not replace the Purple Book, but expands operations and maintenance (management-in-place) information. • Removals may be required by NESHAP-Asbestos rules during renovation or demolition projects.
1990	EPA issues letter to schools	• Schools can revise their asbestos management plans based on upcoming re-inspections. • Management-in-place should be the keystone of asbestos-abatement programs.
1990	EPA issues Environmental Hazards in Your Schools under various laws	• In section on asbestos, previous information is reviewed.
1990	EPA issues "Advisory for the Public" under TSCA and AHERA	• "Five Facts" are expanded to emphasize a) low levels of exposure in most schools, b) dangers of arbitrary removal, c) benefits of management-in-place.

Findings

The Asbestos Communications Review Team made the following Findings, many of which represent a synthesis of information developed from more than one approach:

1. The school asbestos management decision process is a complex, multi-step process involving many different parties and multiple information sources.

2. School officials consider many legitimate factors besides health risks in making choices among asbestos management options.

3. Involvement by parents and staff in school asbestos management decisions tends to be infrequent and reactive.

4. EPA's asbestos-in-schools program is very dependent on communications because of the necessity for site-specific decisions about asbestos management.

5. There is some public confusion about EPA's main messages and policies under the asbestos-in-schools program. EPA has inadvertently contributed to the confusion by issuing evolving--and sometimes what may appear to be conflicting—messages over time.

6. There are many important factors outside EPA's control which have contributed to public confusion about the hazards of asbestos, proper risk management, and the Agency's asbestos message.

7. In light of the importance and difficulty of asbestos communications, EPA could have given greater priority to communicating its messages about asbestos to the general public and interested parties at various points in the process.

8. The formal evaluation of the AHERA program suggests, contrary to anecdotal evidence, that wholesale removal of asbestos in good condition has not been the norm since schools began their AHERA management plans in the late 1980s.

One: The school asbestos management decision process is a complex, multi-step process

involving many different parties and multiple information sources.

As Figure 1 illustrates, there are 12 basic steps in the school asbestos management decision process. Most of these steps are shaped by the requirements of the AHERA rule. These steps involve many different participants from both inside and outside a school's administration. Since information is an important "input" to the decision process, these 12 steps provide many opportunities for different information sources to affect the decision process. Since school officials rarely have the technical expertise to make asbestos management decisions on their own, reliance on outside sources of information and expertise throughout this process is often very high.

Two: School officials consider many legitimate factors besides health risks in making choices among asbestos management options.

School decisions about asbestos management are influenced by many factors. These factors include health risks but also expand to non-health issues such as concerns about long-term accountability, concerns about the complexities and cost of implementing a long-term program to manage asbestos in place, and the desire for an "asbestos-free" school. Such concerns are legitimate reasons for undertaking asbestos management measures which go beyond those required for simple protection of human health, even if this translates into "unnecessary removals." When asbestos management actions occur for these reasons and not because of inaccurate information about EPA requirements, those decisions can be called "informed," even though the removal was not necessary from a public health perspective.

The question of whether or not there have been a large number of unnecessary removals of asbestos in the nation's schools remains unanswered, although the evaluation of the AHERA program indicates the incidence of asbestos removal in the nation's schools was not high. Reliable data on the rate of asbestos removal before AHERA are not available. Much of the anecdotal evidence suggests that there may have been widespread removals before AHERA was passed.

People often assume the availability, or lack of availability, of funds is a major influence on school asbestos

management decisions. Specifically, the assumption is that when schools have the money to finance removals, they choose to remove. EPA's surveys of State AHERA designees and selected school officials suggest that these assumptions are inaccurate. The role of funding appears secondary. That is, schools choose to remove, or not to remove, based on other factors than simple availability of funds. When schools are already inclined to remove asbestos because of some of the factors discussed above, then the availability of funds becomes an important factor.

Three: Involvement by parents and staff in school asbestos management decisions tends to be infrequent and reactive.

Conventional wisdom asserts that parents have played a key, and widespread, role in forcing schools to remove asbestos, regardless of the material's condition. However, other than a few anecdotes, the evidence shows that this type of action on the part of parents, or staff, is the exception rather than the rule. These groups in general have played a minor role in school asbestos management decisions. The AHERA evaluation supports this finding.

At the same time, it should be noted that reactive involvement, however rare, can be very powerful when it does happen. There is evidence that suggests a handful of angry parents can and have forced schools to make dramatic changes in their asbestos management decisions. The reasons for parental involvement in these instances are varied, and may include technical, economic, or political issues.

Four: EPA's asbestos-in-schools program is very dependent on communications because of the necessity for site-specific decisions about asbestos management.

Asbestos control experts and school officials have agreed with EPA that uniform standards can not be effectively applied for asbestos in schools and other buildings because of the importance of and variability of site-specific issues. This has forced EPA to rely heavily on a communications approach which emphasizes providing asbestos control professionals, school officials, and others with the information and training they need to make

informed asbestos management decisions based on the condition of asbestos in particular school buildings.

While this approach is necessary and offers school officials greater control and on-site flexibility in their asbestos management decisions, it can also create some tension between EPA and the regulated community. Some school officials, who rarely have technical backgrounds in hazardous waste management, want directive, step-by-step asbestos management requirements. Being told what to do and when to do it, in some ways, would make asbestos management an easier task for them, if only because it would eliminate the need to independently obtain, analyze, and choose among technical options and recommendations, which may be complex. AHERA's requirements to establish a system of trained, accredited asbestos professionals were designed to deal with this problem of site-specific guidance.

Adding to the communications challenge, school officials look to several sources of advice—EPA regional asbestos coordinators, headquarters experts, and State officials as well.

Five: **There is some public confusion about EPA's main messages and policies under the asbestos-in-schools program. EPA has inadvertently contributed to the confusion by issuing evolving—and sometimes what may appear to be conflicting—messages over time.**

Shifting messages about preferred management options. A careful reading of EPA documents shows the Agency has consistently maintained, both pre- and post-AHERA, that schools do not have to remove asbestos, even though the NESHAP rule may require removal when a school is being renovated or demolished. Nonetheless, it has been possible at many points in time to get the impression, from EPA documents and actions, that removal is the preferred option. For example:

EPA Guidance. The first two asbestos-in-schools guidance documents issued before AHERA (the Orange book, published in 1979, and the Blue book, published in 1983) emphasized that removal is the only "permanent" solution to asbestos management problems. The Blue book characterized removal as "always appropriate, never inappropriate." Both the Orange and Blue books explained

the potential problems with other asbestos management options without mentioning the possible risks associated with improperly executed removals.

The message shifted slightly with the Purple book (published in 1985). Here, in some sections of the document, in-place management is placed first on some of the listings of options. In previous documents, removal was always listed before in-place management, subtly reinforcing the Agency's emphasis on the attractiveness of removal. However, this is the only major shift from the preceding guidance. The larger message in the Purple book continued to be that removal is the only permanent solution to asbestos problems. The book repeats the Agency's observations on the disadvantages of non-removals, and again does not emphasize the potential hazards associated with improperly executed removals, given the limited information at the time.

While the Purple book was released before AHERA was passed, it served as the main guidance document for schools to develop their initial management plans under AHERA.

In 1990, EPA published the Green book. This document focuses exclusively on Operations and Maintenance (management-in-place) and emphasizes that improper removals can cause significant health risks. Some parties outside EPA have characterized the Green book as a 180-degree shift in Agency policy. A careful reading of this document indicates that there is a new emphasis, although not to the degree that Agency critics charge. For example, the Green book strongly emphasizes the hazards associated with improper removals, and stresses that in-place management may often be a schools best asbestos alternative. However, this message was presaged in 1989 in an earlier publication, the ABCs of Asbestos, where potential problems with poorly executed removals were noted.

Enforcement Policy. Before AHERA, there was an asbestos inspection rule requiring schools to identify asbestos in their buildings. When school compliance with this rule proved extremely low (i.e., less than 50 percent), senior EPA officials stepped up a rhetorical campaign (mainly through public speeches) emphasizing the risks of asbestos and the need for compliance with the inspection rule. EPA also began to publicize enforcement actions against schools which did not comply with the rule. These actions may have fed public

perceptions that removal was the best way to avoid problems with EPA.

Conflicting messages perceived from different EPA programs. The mandates and main messages associated with other EPA programs may sometimes appear to the regulated community to conflict with those from the asbestos-in-schools program. For example, EPA's Office of Air & Radiation, implementing NESHAP-Asbestos requirements under the Clean Air Act, calls for removal of asbestos prior to demolition and renovation in buildings. The main message one receives under NESHAP-Asbestos rules is that asbestos is dangerous and needs to be removed prior to renovation or demolition; management-in-place is not an option once NESHAP-Asbestos requirements apply. The Office of Toxic Substances, operating under the authority of the Toxic Substances Control Act, recently banned further manufacture of asbestos-containing products in the United States. This ban may appear to send the same larger message that NESHAP-Asbestos does: asbestos is dangerous, and we need to get rid of it. Both messages can be seen to conflict with the more complex message of the asbestos-in-schools program, where site-specific management decisions must be made and often may include management-in-place instead of removal.

Outreach efforts also confirmed that inconsistencies sometimes appeared among advice given in the Region, the State, and by Headquarters.

Opportunities for improvement. While EPA recently took steps to make its current policy regarding removal of asbestos in school buildings clearer (e.g., the "Five Facts" as presented in Congressional testimony in early 1990 and reiterated in other Agency documents), there still is both a need and an opportunity to further clarify the Agency's position.

Six: There are many important factors outside EPA's control which have contributed to public confusion about the hazards of asbestos, proper risk management, and the Agency's asbestos message.

Congressional actions. The ASHAA program, which provided federal funds for school asbestos management projects, specifically targeted high risk situations. Many of the projects funded through ASHAA have been asbestos removals precisely because of the nature of the project

selection process which targets the most serious hazards, which generally require removal. Thus, federal funding actions under ASHAA may have fed public perceptions about the overall risks posed by asbestos-in-schools and could have led to perceptions that EPA requires, or encourages removals.

Shortly after the advent of ASHAA, Congress passed the AHERA legislation. AHERA contributed a sense of imminent danger to the asbestos-in-schools situation by calling itself an "emergency response act." The sense of urgency was augmented by the tone of the Act's descriptions of the risks to children. Specifically, the Act heavily emphasized the potential dangers of asbestos exposures and continually reiterated the need for reducing exposure with statements such as:

> "The danger of exposure to asbestos continues to exist in schools and some exposure actually may have increased due to the lack of Federal standards and improper response actions."

Although the tone of this quote is not inflammatory, in the context of an "emergency response act" it conveys a sense of urgency and crisis. This atmosphere of high risk and emergency was augmented by the extremely short implementation deadlines imposed by the Act. For example:

- EPA had only six months to develop, from scratch, a national model plan for training and accrediting asbestos inspectors, planners, and abatement contractors.

- The Agency had only 12 months to promulgate rules to implement AHERA; conventional rulemaking normally takes at least 18-24 months;

- Schools were only given 12 months to develop their management plans, a task most of them were ill-prepared to meet.

All of these factors may have contributed to public perceptions that (1) the risks from asbestos in schools are extremely high and (2) the most prudent reaction is to completely rid the schools of the danger by removing the asbestos.

The outreach effort confirmed that the most prudent reaction may also consider such issues as insurability and liability for the school.

Public conflict about the basic asbestos message. The long-term, chronic health risks posed by asbestos are difficult to explain in simple terms. This difficulty has been considerably exacerbated by the severe polarization of the public debate about asbestos risks. Two of the major issues of concern are (1) what the risks from asbestos are (and how they might vary depending on exposure, fiber type and size), and (2) what federal regulatory policy should be adopted in light of those risks.

There are many stakeholders in the asbestos debate, and over time these groups cover the full spectrum of beliefs, as illustrated by Figure 2. Some cluster at either the "one fiber can kill" position or the "most fibers are safe" position. Each of these positions calls for a different regulatory approach than EPA currently advocates. In contrast, EPA has taken a middle-ground position best described as "keep low levels low," and has continued to assert that its current approach to asbestos-in-schools is the most advisable.

As the controversy about health risk receives increased media attention, more and more people may begin questioning the seriousness of the risks posed by asbestos, and the appropriateness of the management approach EPA has taken under AHERA. Different stakeholder groups are investing considerable resources in publicizing their views on asbestos, and EPA has not always been able to respond quickly to clarify the Agency's position or correct inaccurate information. The polarization of the health risk debate makes EPA's communications tasks both more difficult, and more important.

School dependence on multiple information sources. Since school officials rarely have the technical expertise, either themselves or on their staff, to deal with asbestos issues themselves, they must look outside their school system for information and technical advice about asbestos management options. The fact that there are multiple voices competing for their attention does not make this task any easier.

As Figure 3 illustrates, there are many different message "senders" in the asbestos arena. Each of them has different perspectives and interests. While school officials rely on EPA as a major information source, they use other sources as well, including private consultants, contractors, state government, and the popular press. The messages school officials receive from these sources

sometimes compete and conflict with EPA's. Ultimately, this can create a lot of confusion and "noise" in the communications network, making EPA's message less audible.

The challenge for EPA is to adopt communication strategies which better emphasize what EPA's message is, and how (and why) it may differ from messages received from other sources. The caveat is that, regardless of how well EPA improves the approach to communications, the quality of information given to school officials from other sources not under EPA's control will remain a limiting factor on the overall impact of EPA's communications efforts.

Insufficient communications networks. AHERA applies to all elementary and secondary school systems—large and small, public and private. However, there is no single communications network for EPA to tap into to allow it to reach all of these schools. Over time, the Agency's links with public schools and large private school systems have become fairly strong, but there are still problems with distributing informational materials to small private schools, sometimes because they come into and go out of existence very quickly, and others because not all States have strict licensing requirements for small private schools. Even when the latter institutions receive EPA AHERA materials, they are more likely to have problems complying with AHERA requirements, due to funding and staffing constraints. In addition, in some areas of the country there is a strong school culture (mainly among private sectarian schools) against federal intervention in school affairs. This further complicates the effective transmission of EPA's AHERA messages.

Seven: **In light of the importance and difficulty of asbestos communications, EPA could have given greater priority to communicating its messages about asbestos to the general public and interested parties at various points in the process.**

In comparison with other EPA programs, the asbestos-in-schools program has devoted considerable time and energy to its communications effort, especially since the passage of AHERA. The program has faced many obstacles to effective communications. Some of these have been outside the Agency's control; others have been created by

EPA actions, such as the NESHAP and asbestos ban rules, which might be perceived as contrary to the Agency's in-place management message. The asbestos-in-schools program staff faces a very complicated communications challenge. They have made a concerted and credible effort to explain the requirements of AHERA and to provide risk management guidance to a large and varied constituency. They have accomplished this effort in the face of difficult deadlines, serious funding constraints, and limited statutory flexibility.

Nevertheless, despite its considerable efforts, EPA must share some of the criticism for the asbestos communications problem. The Agency did not always assign sufficient resources to respond immediately to dissonant messages broadcast by other sources (representing their own interests regarding asbestos) or develop and publish key guidance in a timely fashion. It appears that some school officials did not fully understand their roles and the respective role of EPA guidance in the development and implementation of the management plans.

Some officials felt that they received the important guidance only after they completed their plans and then did not feel the plans could be legally changed. While many attempts were made to inform those officials of their responsibilities (see the background information on AHERA outreach and communication to schools), the dissonant voices, the unrelenting press of program business, and the early ambiguity and late delivery of some guidance materials may have had an impact on the overall effectiveness of the outreach effort.

As a result, EPA's asbestos messages have not always reached the people at which they were aimed, did not always reach them in a timely manner, and did not always succeed in conveying the message in a clear and unambiguous manner. Despite the encouraging results of the AHERA evaluation which indicate that schools are <u>not</u> spending large sums of money removing asbestos which can be safely managed in place, some schools have conducted unnecessary removals and some school officials did not understand that EPA has offered a management-in-place option, where appropriate, since 1985.

Eight: **The formal evaluation of the AHERA program suggests, contrary to anecdotal evidence, that**

wholesale removal of asbestos in good condition has not been the norm since schools began their AHERA management plans in the late 1980s.

School officials may have been less confused about AHERA requirements and EPA's policy guidance than anecdotal information suggests. It is generally accepted that AHERA has been successful in achieving its initial objective of conducting inspections and developing management plans. By the AHERA deadline of July 1989, fully 94 percent of all public and private schools had completed their initial AHERA inspections and developed management plans for their buildings. Certainly an important part of the EPA message—inspect, evaluate, and correct—has been getting through.

Second, EPA's formal evaluation of the effectiveness of the AHERA program, completed earlier this year, indicates that the fundamental elements of the program were successfully executed. With regard to the subject of this review—whether schools were under the mistaken impression that removal of asbestos materials represented EPA's policy guidance—it appears that the vast majority of AHERA response actions taken by schools were consistent with the Agency's management-in-place philosophy. This leads us to the conclusion that if removals were taking place, they were exceptions to the rule and did not represent a widespread practice. While this does not account for activities prior to the passage of AHERA in 1986, nor does it account for possible removals from buildings other than schools, the evidence clearly indicates that school officials have largely understood the EPA management-in-place message, along with the requirements for inspections, management plans, and accredited personnel.

The evaluation, based on statistically significant surveys, found that:

- Schools identified about 70 percent of the individual suspect asbestos materials covered by the evaluation, representing about 87 percent of the total quantity of material.

- Most of the response actions (85 percent) taken to date by schools involve managing asbestos in place.

In addition, a survey of school principals showed that parents and teachers did not appear to panic upon learning about the presence of asbestos in their schools.

RECOMMENDATIONS

Some of the lessons learned from EPA's experience with communications in the asbestos-in-schools program have implications for EPA's approach to similar risks. Asbestos-in-schools is not the only environmental problem which does not easily lend itself to conventional command/control regulation. For example, indoor air in general, and radon specifically, are two examples of environmental problems which call for flexible, case-specific approaches and an emphasis on communications rather than regulation of ambient air contaminants.

The lessons we learn from communications in the asbestos-in-schools program may help EPA improve its communications efforts in these and similar areas where regulations by themselves will not accomplish the Agency's risk management goals.

1. EPA should (1) continue its efforts, begun with the "Five Facts," to explain the Agency's interpretation of available health risk data and to obtain better information about those risks; and (2) explore the desirability of developing and distributing an asbestos-management-priority list designed to help schools target their asbestos-management activities.

2. EPA should make a greater effort to communicate messages that are consistent across the agency.

3. EPA should communicate its key messages in a more forceful and timely manner.

4. EPA should routinely pretest and evaluate its communications and make sure they are clear and unambiguous and achieving their desired effect.

5. EPA should give risk communication a much higher priority as a risk reduction tool.

One: **EPA should (1) continue its efforts, begun with the "Five Facts", to explain the Agency's interpretation of available health risk data and to obtain better information about those risks; and (2) explore the desirability of developing and distributing an asbestos-management-**

priority list designed to help schools target their asbestos-management activities.

The original version of the "Five Facts", delivered by EPA's Assistant Administrator for Pesticides and Toxic Substances, Linda Fisher, in Congressional testimony in June 1990, acknowledges that there is controversy about the degree of risk posed by different asbestos fibers. The Five Facts go on to state that:

- EPA has adopted a prudent approach to asbestos regulation by assuming that all fibers are equally potent.

- While some sources have suggested that exposure to chrysotile or common white asbestos may be less likely to cause some asbestos-related diseases, various scientific organizations, including the National Academy of Sciences, support EPA's more prudent regulatory approach.

This message needs to be expanded and repeated as long as the degree of risk posed by asbestos remains a focal point of public controversy. The following points should be stressed:

(1) EPA is aware of the controversy about the relative risk posed by different asbestos fibers.

(2) EPA has taken what it sees as a prudent regulatory approach given the nature of the risk information currently available.

(3) EPA's approach is supported by respected scientific authorities; and

(4) EPA is and will continue to conduct additional studies (e.g., the Health Effects Institute-Asbestos Research effort) to ensure that its policies continue to be based on the best scientific information available.

Secondly, school officials are sometimes uncomfortable with the degree of individual discretion which must be exercised in determining what asbestos-abatement options are most appropriate in individual circumstances. EPA has provided guidance on these matters, but the need for site-specific decisions appears to be consensual. At the same time, the AHERA rule provides some descriptive information which is more directive than the guidance and specifies what should be done under

certain circumstances. It may be helpful to include copies of these descriptors (as they are, or modified) in future AHERA mailings.

Two: EPA should make a greater effort to communicate messages that are consistent across the agency.

EPA is one agency and it should act and speak with one voice. The fact that the agency has multiple programs which operate somewhat independently and which are charged with implementing many different laws does not excuse the agency from communicating messages which are not consistent or at least compatible across programs. The problem of inconsistency that was found in this analysis is not just an asbestos problem; it is an Agency problem.

Audiences receiving EPA messages about risk do not stop to make distinctions among the Agency's various programs. When EPA sends out messages from several different offices which may conflict either explicitly or implicitly, it dilutes the impact of each of the messages, no matter how carefully each has been crafted and communicated. It also damages the Agency's credibility.

However simple the recommendation to be consistent may seem in principle, it is not simple in practice. The facts of bureaucratic life often make it difficult to achieve complete coordination in a large and complex organization. Ordinary admonitions do not work. Heavy-handed clearance procedures are expensive to operate and can slow operations to a crawl. A happy medium needs to be found.

EPA has recently created a series of regulatory "clusters." Staff from different programs who are developing regulations for the same industries and/or substances are developing their proposals jointly. This approach needs to be applied in more instances than just new regulations. An "asbestos-communication cluster" with members from the Office of Toxic Substances, the Office of Air Quality Planning and Standards, the Office of Solid Waste and the Office of Communications and Public Affairs would be a good prototype.

The Office of Communications and Public Affairs presently coordinates major communications efforts across the agency. However, it does not have adequate

resources to review all publications. It was by chance rather than routine review that a publication on asbestos from one office giving a message that appeared to conflict with the message from another was discovered on its way to the printing shop during the course of this project. While there had been technical coordination among the offices, there was not an overall communications review. The Office of Communications and Public Affairs does not routinely review all publications for this type of consistency because its does not have the staff to do so without creating an unacceptable bottleneck. This situation must be corrected.

Where different statutory mandates, program requirements or other imperatives make it necessary to send what might otherwise appear to be inconsistent messages, the reasons should be clearly stated. Similarly, where statements represent an evolutionary change in emphasis, a concerted effort should be made to acknowledge and explain the apparent differences.

Three: EPA should communicate its key messages in a more forceful and timely manner.

When EPA has an important message that can affect many precious lives and dollars it should make sure that message is clearly heard by all affected parties. The Agency's communications need to get the attention of audiences that have many different issues on their minds and need to avoid being drowned out or otherwise altered by communications on the same issue from other parties.

For many issues, the Agency's communications strategy is often limited to the publication of major documents and press releases. Oftentimes, however well meaning and precisely drafted, EPA's messages have not reached the intended audiences in their intended form and have not been timely.

For important issues such as asbestos, EPA should generate more interpretive materials for affected parties and distribute them more widely and quickly. In addition to major technical guidance documents there should be more short pamphlets which are intended to reach broad audiences with specific messages. Messages to narrow, targeted audiences should also be developed. A special effort should be made to have articles by EPA officials on changed program emphases or new regulations published

in trade and technical publications instead of leaving it to others to interpret and comment on them, as has often been done in asbestos and on other environmental problems.

These efforts should not be limited to top officials; officials at all levels should be making more personal efforts to communicate major messages. Throughout the process the agency should strive for repetition and reinforcement. The agency should not assume that because it has said something once that the message has been successfully transmitted.

There are many appropriate occasions for such efforts. Outreach for new regulations and changes in program emphasis should be given special priority, and should be accomplished quickly. Major enforcement and funding decisions should also be candidates for special priority communications, so that they are properly understood by interested parties and do not have unintended consequences. An example of the latter instance is EPA's asbestos grants program. The fact that nearly all the funds go for removals rather than management-in-place is because the law requires that grant awards be made for only the most serious cases, where removal is often necessary; it is not, as some have thought, because EPA necessarily favors removal over management-in-place.

Another occasion for clear, forceful and timely communication is when other information sources inaccurately depict key issues and requirements. EPA needs to make a greater effort to follow what others are saying and promptly respond to inaccuracies as quickly as possible. EPA's shortcomings in this regard are not limited to asbestos; indeed, there is no evidence to suggest that the pattern here has been substantially different from the Agency norm.

Constant coordination with all message senders is also important to avoid variances in the messages coming from Regions, Headquarters and States.

Effective, accurate communications is a normal part of progressive program administration. In most instances, no special occasion is needed for a well-schooled and aware communications effort. Nor, in many instances, should major additional resources be required. Clear, forceful and timely communications should simply be a part of working smarter and total quality management.

Four: **EPA should routinely pretest and evaluate its communications and make sure they are clear and unambiguous and achieving their desired effect.**

When EPA says something, there should be no mistaking what it is saying. On asbestos or on any other Agency issue, it should not be possible to get more than one message, especially from a single publication.

The most important step that EPA could take to this end would be to pretest all important documents with target audiences, and make changes to improve the clarity of the message and messages. The Agency spends a great deal of money each year to project the economic impact of proposed regulations. Yet, somewhat surprisingly, EPA does very little to gauge the clarity and likely impact of proposed publications. The Office of Policy, Planning and Evaluation has recently published a handbook on pretesting. Many of the methods described are not particularly expensive or time consuming. EPA program offices should use them.

Pretesting should not be confused with the present external review system, which involves interested offices from within the Agency and from outside. This type of review is entirely legitimate and necessary. However, what frequently happens when the comments all come back is that extensive qualifying language is added to satisfy all the reviewers. The result is often that the publications end up in a state of terminal blandness--or present mixed messages. The apparent attractiveness of "on the one hand, on the other hand" should be balanced against the need for clarity. If important qualifying language must be added, it too should be pretested.

Another way that mixed messages slip into publications is in the form of disclaimers that have sometimes been put in the front of publications on asbestos and other subjects, to the effect that the document has been prepared by a contractor and EPA does not necessarily stand behind everything in it. It is recognized within the Agency that liability, not accuracy, is the driving force in these instances, however, to the reader, no one knows where EPA stands when this happens, and the Agency looks like it doesn't really know the subject. This practice should be discontinued. If EPA is not sure about

some of the details, the text of the document should explain which details are uncertain and why.

Finally, when a major publication has been in circulation for a reasonable amount of time, such as a year, it should be evaluated to find out if it is having the intended effect. EPA rarely takes this step. The prevailing attitude is that once the Agency has spoken, that the job of communication has been completed. In fact, the result is that EPA misses out on the opportunity to learn whether the particular document in question or any new documents need to be improved. As with pretesting, this step need not be expensive or time consuming.

Five: EPA should give risk communication a much higher priority as a risk reduction tool.

At the root of each of the foregoing recommendations is EPA's clear need to assign a higher priority to communications as a risk reduction tool. This need exists throughout the Agency, not just in the asbestos-in-schools program. In fact, despite the concerns observed in this study of asbestos communications, there is reason to believe that greater attention is given to communications in this program than in many others.

Historically, communications has frequently been an afterthought at EPA. Important decisions have been made and then they have been communicated. Communications comes afterwards. Moreover, rarely is communications considered to be itself a front-line tool of risk reduction, in the sense that traditional regulations and now economic incentives are considered to be front-line tools. And, when it turns out that communications is the key element in a program, it is often not recognized and treated as such. There are those at EPA who recognize the importance of communications, but the general culture of Agency staff is technically oriented and not communications oriented. EPA needs to stop treating communications as a poor and unworthy relative.

This recommendation is supported not only by the findings of this project. The EPA Science Advisory Board, in its recent report, Reducing Risk: Setting Priorities and Strategies for Environmental Protection, made a similar recommendation. While acknowledging the importance of traditional regulations and enforcement, the Board emphasized that "the long-term reduction of environmental risks will require EPA, and the nation as a

whole, to use a far broader range of tools." Along with economic incentives, the Board stressed the importance of information as a risk reduction tool. Operationally, this recommendation means that communications needs to be given both greater resources and management attention at all levels, particularly at the technical staff level in the program offices. Only then can messages be made consistent across the Agency. Only then can messages be pretested and evaluated to make sure that they are clear and unambiguous to their intended audiences and having their desired effect. And only then can communications be used to its full effect as a risk-reduction tool.

Appendix A (Outreach)
to Communicating About Risk: EPA and Asbestos in Schools

Background Information

An outreach effort, an endeavor to meet in person with representatives of the many organizations affected by the asbestos-in-schools program, was used to gain firsthand opinions about EPA's communications on asbestos.

Organizations invited to participate in the outreach project received written information about the review's purposes prior to their involvement in meetings or their provision of oral or written comments to the Agency. Organizations' representatives thus learned that the review's purposes were to:

1. Examine what EPA and other organizations have said about asbestos;

2. Determine whether the many asbestos communiques have confused rather than enlightened people on what they and their organizations should do to minimize health threats posed by asbestos;

3. Ensure further EPA-initiated communications on asbestos are clear and understandable to the audiences for whom they are intended.

The organizations also learned--in advance of meetings—that primary questions being asked in the review were:

- What guidance or other information has EPA distributed that has aided or hindered communication or interaction between affected parties such as school boards, administrators, contractors, teachers and parents?

- What incentives or disincentives may influence selection of an appropriate asbestos abatement option?

- What affect does information on asbestos from mass media and interest groups have on communication and interaction between affected parties?

- What steps should be taken by EPA and others to improve communication and interaction between affected parties?

Participants in Outreach

Organizations that participated in outreach meetings and/or provided oral or written information used in the review include:

Agudath Israel of America
American Association of Christian Schools
American Association of Elementary School Principals
American Association of School Administrators
American Federation of Teachers
Asbestos Information and Research Coalition
American Insurance Association
American Insurance Services Group
Council for American Private Education
Environmental Roundtable
Laborers - Employers Cooperation and Education Trust
National Education Association
National School Boards Association
National Parents Teachers Association
Occupational Health Foundation
Service Employees International Union
Sheet Metal Workers International Association
United Brotherhood of Carpenters and Joiners
Workplace Health Fund

Attachment 1 to this Appendix contains more detailed information on the outreach effort, e.g., representatives at meetings, the dates of those meetings and telephone conversations and when documents were provided or correspondence sent EPA as part of the review.

General Observations

Constituencies represented in the outreach effort felt that EPA has made a worthwhile effort to address asbestos as a risk to public health and most particularly, the health of children in the nation's public, parochial and private schools.

Constituencies recognized problems that have affected the asbestos-in-schools program. Those problems included:

- conflicting information on health risks of asbestos exposure;

- o virtually-impossible-to-meet deadlines;
- o inadequate funding resources for schools and EPA;
- o inexperienced and unregulated contractors;
- o Congressional "shock" language such as in the title of the Asbestos Hazard Emergency Response Act;
- o few well-trained people that schools could employ or contract with to perform legislatively mandated work; and
- o an initial lack of infrastructure and expertise in schools and parent organizations to analyze asbestos abatement options and then carry out the maintenance and/or removal projects effectively and economically.

Despite the asbestos-in-school program's problems, the majority of constituencies agree that many difficulties have been overcome and the Agency's work to make schools free of the risk of asbestos is commendable.

Observations on Communications

School Organizations

- o have mixed perceptions of what EPA's message has been on what to do about asbestos in schools. Some believe that EPA created a fear about asbestos that was not matched by clear explanations from the Agency of the options available to schools to mitigate or eliminate asbestos risk. Other school organizations always understood that in-place management was an option to removal. (The message to schools was cluttered very likely because all federal funds for asbestos remediation were required to be used for removal).
- o want and need to get information from the Agency in a more timely fashion and on a more consistent basis. Specific requests pertained to getting updates on asbestos program activities, reinspection requirements, grant programs, and clarification on approved methods to change management plans. Schools also indicated that problems of inconsistency of responses from EPA headquarters and regions and States needs resolution.

- have struggled with pragmatic problems in dealing with asbestos in their schools. Those problems include: very tight budgets; insurance premiums too high or insurance even unavailable from external sources for management-in-place of asbestos; perceived fear of EPA levying large fines (causing some schools to forego insurance coverage in favor of asbestos removal); State regulation of insurance causing multi-district school system coverage problems; small school systems not having personnel and resources required to evaluate and employ qualified, well-trained inspectors and contractors; State regulations that require trained personnel—not volunteers—to handle school maintenance chores and states lacking reciprocal agreements to cover certification and recertification of workers.

- feel EPA's outreach with school organizations has worked well and effectively to inform and educate their constituencies. EPA was praised for its "100 Questions," "The ABC's of Asbestos," and "Environmental Hazards in Schools" publications. Both the Purple book and the Green book are regarded as excellent, however, the information was needed earlier than it was available. One organization felt that the "slant" of the Green book differed from the Purple book. Another organization hoped that the EPA would involve more organizations—representing the very small schools—in its outreach efforts.

- recognize that custodial and maintenance workers require specialized training. One organization has distributed training programs to about 1,000 schools, however, that effort—based upon the U.S. having 120,000 schools—is not likely to have met the total training need. No Spanish or other non-English-language training materials appear to exist for schools' custodial and maintenance workers who may experience difficulties in reading and comprehending English.

- want EPA to provide help in determining the risk-ranking of environmental hazards—in addition to asbestos—to students' health.

- are aware of EPA statements made about asbestos in Congressional hearings but appear unaware of asbestos information communicated by the

Agency—of interest to their constituents—in the Administrator's speeches.

Insurance Organizations

- before the passage of ASHAA and AHERA, had stopped providing prospective coverage for asbestos exposure, began providing insurance that specifically excluded any coverage for past or future exposures for schools as well as other organizations.

- indicate that schools that currently have property casualty coverage likely have policies that exclude asbestos exposure.

- agree that removal of asbestos could make schools more attractive as candidates for property insurance coverage but not for bodily injury coverage against asbestos exposure.

- support the statements made in EPA's Five Facts on Asbestos.

Business and Industry Interests

- believe that the media and the general public will not distinguish between asbestos risks in schools, other public buildings, and homes.

- believe, in general, that EPA has changed its message to state more correctly that managing asbestos-in-place is a sound option. They—representatives of building ownership, real estate, asbestos product manufacturing and insurance organizations—agree that EPA's communications effort is now on the right track.

- agree that information on EPA's asbestos program was needed before it was available.

- consider that documents produced by the asbestos program—particularly the Green book—are excellent.

- agree that EPA processes to involve groups affected by asbestos legislation have worked quite well. Business interests recommend that if no Agency arbitration specialist is available to manage consensus building on critical asbestos issues that a

qualified negotiator be contracted with to lead necessary discussions.

- o regret that the Administrator's statements on asbestos did not get sufficient attention in mass and specialized media.

Labor Organizations

- o believe that asbestos risk can be explained in a non-threatening way; that the high risk caused by exposure to deteriorating asbestos must be communicated; and that the terms used to explain risk be acceptable in a public health lexicon.

- o state that the message emphasis has been changed. The management-in-place emphasis ignores the fact that ultimately asbestos must be removed for health protection and pollution prevention purposes.

- o criticize the lack of information available about the Health Effects Institute-Asbestos Research project, its scope, its funding sources and its methods for selecting literature review panel members. Labor organizations believe EPA breached the peer review process on the Green book and undercut the asbestos consensus group effort. Labor believes a qualified negotiator is required to lead asbestos discussions among organizations with divergent views.

- o agree that the Green book contains much good information but has problems with some of its content, primarily with information contained in the book's forward, which was not peer reviewed and which contains an inaccurate reference (from Labor's perspective) to negligible risk. Labor recommends that the Green book be recalled or revised and that any work on the Occupant's Guide cease until problems on the Green book content are resolved. Labor is dissatisfied also with the content of the Asbestos in Your Home publication (a joint product of EPA, the American Lung Association, and the Consumer Products Safety Commission) It, too, Labor would like to see recalled. The content of the Environmental Hazards in Schools booklet was praised.

- state that national training standards for workers must be set and enforced.

- think that Administrator's statements--from a communication perspective--have been mainly right. Agree with Administrator's insistence upon sound science guiding EPA's work.

Attachment 1 to Appendix A (Outreach)
to Communicating About Risk: EPA and Asbestos in Schools

OUTREACH EFFORT - Participants

Agudath Israel of America - Telephone Conversation - March 12, 1991 - Debra Jacobs

American Association of Christian Schools - Meeting - February 19, 1991 - Reverend Terry Bachur, Reverend Theodore E. Clater and Dr. Malcolm Cumming - Letter - March 8, 1991 - Reverend Theodore E. Clater

American Association of Elementary Schools - Telephone Conversation - January 24, 1991 - Edward Keller, Ph.D.

American Association of School Administrators - Meeting - January 4, 1991 - Letter - February 8, 1991 - Joyce Hill

Asbestos Information and Research Coalition - Meeting and Documents Provided - November 6, 1190 - Edward J. Gorman III and Paul Heffernan, Letter - December 6, 1990 - Paul Heffernan, Document Provided February 12, 1991 - Edward J. Gorman III

American Insurance Association - Meeting - March 1, 1991 - James L. Kimble and Martha Hamby - Meeting - James L. Kimble - May 1, 1991

American Insurance Services Group - Telephone Conversations - May 8 and May 14, 1991 - Mickey Jones

Council for American Private Education - Meeting - January 12, 1991 - Letter - February 25, 1991 - Greg D. Kubiak

Environmental Roundtable - Meeting - November 7, 1990 - W. R. Brick, Jr., Robert Bell, Jr., John Biechman, Judy Black, Francis Bouchard, Leslie Cheek, III, Cam Collova, Dennis R. Connolly, Jim Dinegar, William Edwards, Jack Ericksen, David M. Farmer, Paul Fiduccia, Margaret Hathaway, Lisa Hickey, William Holley, Sarah Hospodor, Jacqueline M. Johnson, Lisa Kill, James L. Kimble, Edward S. Knight, Roger N. Levy, Kenneth Y. Millian, D. Kenneth Patton, Bobbie Perkins, Dennis M. Ross, Rhond Roth, Bruce Roznowski, Kenneth D. Schloman, Edlu J. Thom, Jim J. Tozzi, St. Clair J. Tweedie, Ann vom Eigen, John F. Welch, Yvonne Zoomers. Letter - November 15, 1990 - Kenneth Y. Millian and D. Kenneth Patton

International Association of School Business Officials - Letter February 25, 1991 - Clark J. Godshall, Ed.D.

Labor-Employer Cooperation and Education Trust - Meeting - November 21, 1990 - Karen Jordan

National Education Association - Meeting - January 30, 1991 - Joel Packer

National Parents Teachers Association - Meeting - January 30, 1991 - Carolyn Henrich

National School Boards Association - Meeting and Documents Provided - December 19, 1990 - Katharine Herber

Occupational Health Fund - Meeting and Documents Provided November 21, 1990 - Don Elisburg and Scott Schneider

Service Employees International Union - Meeting and Documents Provided - November 21, 1990 - Bill Borwegan

Sheet Metal Workers International Union - Meeting and Document Provided - November 21, 1990 - Lynn MacDonald

United Brotherhood of Carpenters and Joiners of America - Meeting and Documents Provided - October 19, 1990 - Edward J. Gorman III

United States Catholic Conference - Meeting - December 13, 1990 Sheila Bailey, G. Patrick Canan, Reverend William F. Davis, OSFS, and Megan Doyle. Letter - December 26, 1990 - Reverend William F. Davis

Workplace Health Fund - Meeting and Documents Provided - October 19, 1990 - Sheldon Samuels

Appendix B (Content Analysis)
to Communicating About Risk: EPA and Asbestos in Schools

A CONTENT ANALYSIS OF DOCUMENTS ON ASBESTOS FROM EPA AND OTHER SOURCES

Contents—

I. Introduction
II. What the Content Analysis Reviewed
III. Content Analysis
IV. Influence of Parental Pressure
V. Recommendations

I. INTRODUCTION:

An important part of all EPA programs is how the Agency communicates with the public about them. Two of the most important issues requiring clear communications in the context of any environmental problem or program are (1) the degree of threat to human health and the environment and (2) the applicable laws and rules designed to protect those at risk. This chapter reviews the efforts of EPA and others to communicate about these issues in the case of the EPA asbestos-in-schools program in particular and in public and commercial buildings in general.

For a number of years, EPA (and to a lesser extent OSHA and CPSC) has been communicating about the asbestos risk and asbestos risk abatement through legislation and regulations, guidance documents and pamphlets, news releases, speeches and Congressional testimony by Agency officials, and participation in various forums and training programs with interested parties. Because a major focal point of asbestos regulatory concern relates to asbestos-in-schools, much of EPA's asbestos communications effort has been directed at the nation's school officials, teachers and other employees, and parents.

For this reason, this content analysis focusses on asbestos-in-schools, although, obviously, this issue of asbestos in all public buildings is germane because schools are public buildings even though for program and statutory purposes the Agency must deal with them separately. Within this focus, the content analysis looks particularly at (1) how EPA presented the asbestos danger and (2) how the Agency communicated about the need for removing asbestos from schools or using some other abatement

approach. The analysis also deals specifically with (3) parental/community reaction to the asbestos issue as it examines what EPA said—or didn't say—and (4) how the messages changed over time, especially as legislation changed. It also looks at (5) how concerned organizations and their publications reflected the EPA message—did they support it, oppose it, or even distort it?, and how the Agency dealt with negative reactions to EPA's views of the asbestos problem. The analysis covers what the most current EPA asbestos guidance document calls "EPA's approximately 11 years experience in considering public input and fine-tuning policies on managing asbestos-containing materials in buildings."

II. WHAT THE CONTENT ANALYSIS REVIEWED

The content analysis looked at two kinds of federal documents. These include "enabling documents"—Acts of Congress and regulations concerning asbestos promulgated by EPA or OSHA since the early 1970s, and guidance or informational publications designed to interpret the rules and, in some instances, to provide detailed instructions on their implementation. The EPA rules originated with the Office of Toxic Substances (OTS), the Air Program's Office of Air Quality Planning and Standards (OAQPS), and the Office of Solid Waste (OSW). OSHA also promulgated rules. Guidance and information materials originated with OSHA, OAQPS, OTS, OSW, the Office of Communications and Public Affairs (OCPA) and OSHA. Some were produced in cooperation with outside organizations such as the National Education Association, the National Parent-Teachers Association, the National School Boards Association, and the Association of School Administrators. These covered a number of different aspects of asbestos-in-school problems.

In addition, the content analysis reviewed a number of news releases, pamphlets, backgrounders produced by OCPA, the EPA Journal, specialized educational trade association publications and legislative bulletins, Congressional testimony by EPA officials and speeches by the Administrator and others, and articles that appeared in a variety of specialized and general magazines and newspapers.

The review included the following:

A. Legislation, Regulations, and Reports to Congress

- U.S. Occupational Safety and Health Administration standards for private sector worker exposure to asbestos, first promulgated in **1972** and subsequently revised and expanded to include specific standards for private sector workers doing asbestos abatement among other things, as well as subsequent EPA workplace standards for public sector workers.

- NESHAP Air Emission Standards for Hazardous Air Pollutants: Asbestos Regulations applying to building renovation and demolition involving friable-asbestos containing materials. First published in **1973** and amended several times, most recently in **1990** (to include more specific rules about transporting and disposing of asbestos) after it is removed.

- Friable Asbestos-Containing Materials in Schools, Identification and Notification, the "Asbestos-in-Schools Rule promulgated in **1982** under TSCA which established the inspection and notification requirements.

- Asbestos School Hazard Abatement Act of **1984** (ASHAA) Public Law 98-377, **August 11, 1984**, which established a loan and grant program to assist financially needy schools with the abatement of serious asbestos hazards, and rules related to this.

- Asbestos Hazard Emergency Response Act of **1986** (AHERA, Public Law 99-519), **October 11, 1986**, which established the model contractor accreditation program, and required promulgation of rules for school asbestos inspection, management, and abatement, as well as a report to the Congress on asbestos-containing materials in public and commercial buildings.

- Asbestos-Containing Materials in Schools, Final Rule and Notice, published in **October 1987**, which spelled out the AHERA requirements in considerable detail in terms of deadlines, abatement and management methods, requirements for accredited abatement inspectors, management advisors, and contractors.

- EPA Report to Congress, "EPA Study of Asbestos-Containing Materials in Public Buildings," the **February 1988**, report which included for the first time new scientific studies about asbestos in public buildings and recommended further study before development of any legislation or rules related to asbestos in public buildings other than schools. In the report, EPA cites the various studies as a major reason for opposing a regulatory program to control asbestos exposure in public and commercial buildings.

- Asbestos: Manufacture, Importation, Processing, and Distribution in Commerce Prohibitions, Final Rule, issued in **July 1989**, which promulgates a phased ban, over 7 years, of nearly all remaining asbestos uses and products from manufacture, importation, and processing.

- Asbestos NESHAP Revision, including Disposal of Asbestos Containing Materials Removed from Schools; Proposed Rule Revision (This was finalized in **November 1990**). It spells out the requirements contractors removing asbestos from schools or other buildings must follow to protect workers and the public from exposure while transporting the waste and disposing of it.

B. Guidance Publications

- Asbestos-Containing Materials in School Buildings, Parts 1 and 2 (The **Orange book**), issued by OTS in **March 1979** to support the fledgling EPA technical assistance program to help schools and other building owners establish asbestos identification and control programs in their facilities. The two volume publication describes the asbestos threat, where the substance can be found in schools, what can be done about it by way of abatement, and where to get further information. It is the first EPA publication to deal with asbestos in great detail, and contains considerable material on the potential dangers of asbestos. Subsequently, the 1982 EPA Asbestos-in-Schools Rule required that one copy be available in all the administrative offices of every school.

- Guidance for Controlling Friable Asbestos-Containing Materials in Buildings (**The Blue book**), issued by OTS in **March 1983**, is to supplement

the previous guidance with recent experience and new information on asbestos control. In the executive summary, it says:

> "For those readers who previously have been involved in the Asbestos-in-Schools program, the guidance offered will serve as a review and update of familiar issues. For those confronted with the problem of controlling asbestos for the first time, the document will identify the critical issues, introduce information on asbestos for the first time, and direct the reader toward the structured development of an asbestos control program."

Like the Orange book, it emphasizes the dangers of asbestos.

- Asbestos Waste Management Guidance--Generation, Transport, Disposal, issued by the Office of Solid Waste (OSW), not OTS, in **May 1985**, is written primarily for those involved in disposing of asbestos wastes. The publication does refer to the school asbestos program and presumably was sent out to schools with the AHERA rules when they were promulgated in 1987.

- Guidance for Controlling Asbestos-Containing Materials in Buildings (The **Purple book**), issued by OTS in **June 1985** is described in the text as a revision of the Blue Book, and a "Note to School District" says it may be retained in school administrative offices in lieu of the Orange book. The Purple book is also cited in AHERA as the current official guidance which will remain in effect until subsequent guidance materials are available. It places special emphasis on concerns about school children. In an introductory summary, the Purple book is described as being substantially revised to incorporate new information and experience related to determining if asbestos is present, planning a control program, and choosing further actions if needed.

- Asbestos in Buildings--Guidance for Service and Maintenance Personnel, issued by OTS in **July 1985**, is a short pamphlet telling workers how to work safely in buildings that contain asbestos. Heavily illustrated, it is filled with do's and don'ts and is used in joint EPA/National Association of

School Administrators and other training programs.

- "Asbestos in Schools" A Guide to New Federal Requirements for Local Education Agencies, mailed to schools in **February 1988**, and used in training programs.

- 100 Commonly Asked Questions About the New AHERA Asbestos-in-Schools Rule, mailed to schools in **May 1988**.

- The ABC's of Asbestos in Schools, issued by OPTS in **June 1989**, was developed by the EPA in cooperation with the National Parent-Teachers Association and the National Education Association to "help teachers and parents answer questions and learn the facts about asbestos in schools." Unlike the Purple book or other technical guidance documents, this is a general information publication that details what school officials have to do to protect children and employees from possible asbestos exposure.

- Managing Asbestos in Place. A Building Owner's Guide to Operations and Maintenance Programs for Asbestos-Containing Materials (**The Green book**) was issued by OTS in **July 1990**, well after publication of the AHERA rules and regulations to provide additional information on O and M. Even though the foreword says it "does not supplant the 1985 Purple book as EPA's principal guidance document," but, "based on our experience since 1985 it expands and refines the Purple book's guidance for a special operations and maintenance (O&M) program." Although it was sent to schools with a covering letter calling it the most comprehensive guidance document since the Purple book in 1985, it has minimal mention of schools.

- A Building Occupant's Guide to Asbestos, (**draft version**) of a forthcoming OTS publication. It is written in a reassuring way as it offers various options for dealing with potential exposure to asbestos in residential or commercial buildings.

- Environmental Hazards in Your School, published jointly by seven EPA program offices in **October 1990**, is a "resource handbook" covering the problems of asbestos, radon, and lead in drinking

water as they apply to schools, and listing informational resources for the three subjects. The National Education Association, National Parent-Teachers Association, Council for American Private Education, National Association of Independent Schools, and the U.S. Catholic Conference participated in development of the booklet.

- An Advisory to the Public on Asbestos in Buildings, prepared by OTS and signed by the Administrator, and mailed to all schools on **March 6, 1991.** This document interprets the Five Facts in terms aimed at the concerns of school administrators, employees, and parents and community groups involved with school-related asbestos issues.

C. **Other EPA Publications and Materials**

- Environmental Progress and Challenges: An EPA Perspective (**June 1984**), Environmental Progress and Challenges: An EPA Perspective (**August 1988**), and Meeting The Environmental Challenge: EPA's Review of Progress and New Directions in Environmental Protection (**December 1990**), general publications summarizing EPA's programs, their accomplishments, and futures.

- The EPA Journal, the Agency's official magazine, in which articles reflect Agency/environmental concerns and Agency activities. Over the years the Journal has published a number of articles and news items about asbestos and asbestos regulation enforcement.

- Asbestos Fact Book, released by the Office of Public Affairs (OPA) in **August 1985 and June 1986,** is a comprehensive document about all aspects of EPA's asbestos programs and is still available for distribution to the media and inquirers.

- Environmental Backgrounder on Asbestos, released by OPA in **November 1988, and revised in March 1989,** is used as a background handout for the news media and other inquirers by the EPA Press Office.

- The Asbestos Informer (**DRAFT**), **dated December, 1990.** This OAQPS Stationary Source Compliance Division publication deals primarily with NESHAP-associated subjects, but does review the problem of asbestos in schools.

- EPA Testimony on Asbestos Before The Congress. The content analysis reviewed Congressional testimony about asbestos legislation by EPA officials from the early 1970s through 1990.

- EPA Press Releases dealing with asbestos matters over the past decade were reviewed to determine what messages about the health threat posed by asbestos and asbestos abatement methods were being communicated by EPA to and through the news media.

D. Educational/School Publications

The content analysis looked at a large number of education organization and professional publications. These included the American School Board Journal and special reports published by the National School Board Association; American Schools and University Magazine, which between 1980 and the end of 1990 published at least twenty articles on school-related asbestos issues; the Council of Educational Facility Planners Journal, which in 1983 published, "Asbestos: A Present Hazard to Education"; PTA Today, which published "Asbestos in Your Child's School--How to Get Ride of It"; AGB Reports, a publication of the Association of Governing Boards of Universities, which published "Asbestos Imperative: What You Must Do", in 1986; School Business Affairs, which in late 1986 had an article on the removal of asbestos from Houston's schools; published an article in 1986 or 87 on "Self Insuring Against Asbestos removal; in December 1988, published a series of articles about AHERA requirements; Education Law Reporter, in March 1990, published a long article, "Contracting for Asbestos Abatement: What You Need to Know"; and, the National Association of Elementary School Principals newsletter, The Communicator, in November 1990, wrote about the Green book under the title, "Guide warns against hasty asbestos removal." The article also questioned the timeliness of the publication.

E. General Publications and News Media

The content analysis included a number of newspaper and magazine articles that were available at EPA headquarters or through the EPA library. While these included major magazines, business magazines, and major newspapers (like the Readers Digest, Time, The New York Times, Business Week, etc.) access to newspapers published across the nation was limited and EPA did not

have a clippings archive. Some anecdotal indication of the extent of newspaper coverage comes from articles in school publications, the galley proofs of the Michael Bennett book, The Asbestos Racket, various magazine articles, and some of the PED survey interviews. OTS provided a collection of newspaper clippings from the year 1988 from 43 states.

III. CONTENT ANALYSIS

A. INTRODUCTION

This content analysis is organized broadly around two major issues: how the risk of asbestos has been presented and the question of which abatement options are appropriate, with emphasis on the removal option as opposed to various forms of management in place. The discussion of each of these issues is divided into sections covering Acts of Congress and EPA materials, and what others said. Each of these discussions is further divided into three time frames: (1) Pre-AHERA (1972-1986) (2) Post-AHERA enactment and the early phases of AHERA implementation (1986-1988), and (3) the period beginning with the 1988 EPA Report to the Congress (1988 to present.)

B. How the risk of asbestos has been presented

1. Acts of Congress and EPA Materials

Several major points emerge from an examination of Acts of Congress and EPA materials:

- All EPA voices--the Office of Toxic Substances (OTS), the Office of Air Quality Planning and Standards (OAQPS), Office of Communications and Public Affairs (OCPA), the Office of Solid Waste (OSW), the Executive offices, and the Office of Policy, Planning and Evaluation (OPPE)--have consistently pictured asbestos as a carcinogen and potentially hazardous to those exposed to asbestos fibers. Only very recently has the concept of this risk being "negligible" entered EPA's asbestos communication lexicon.

- At key points in time, however, the messages about the risks of asbestos that LEAs could get from various EPA sources were somewhat different. This was due to different legislative mandates, changing

scientific estimates of risk not being consistently reflected, and simple lack of coordination.

- Messages from individual EPA offices (e.g., OTS) were reflected with reasonable consistency in such channels as the Federal Register, EPA publications, speeches, testimony, and news releases.

a. The Pre-AHERA Period (1972-1986)

1. Laws and Regulations:

Early OSHA worker protection standards were issued in June 1972, with EPA air emissions standards for asbestos, under the Clean Air Act, in the form of a NESHAP published in April 1973 (these were revised in 1975, 1978, and 1990). Each regulation was accompanied by statements tracing the history of asbestos and the health issues involved. In March 1979, EPA institutionalized official concern about exposure of school children to asbestos by initiating a regionally based technical assistance program to help building owners—and, particularly, school systems—to control asbestos-containing materials in their facilities.

Initially, key Acts of Congress and related rules developed by EPA described the asbestos danger:

October 14, 1975: NESHAP, (CFR Title 40, Part 61, Subparts A and B):

> "Warning signs shall be displayed (that say)...Breathing Asbestos is Hazardous to Your Health." (Reprinted in Orange book, p.42)

May 27, 1982 Friable Asbestos-Containing Materials in Schools, Identification and Notification (40 CFR Part 763):

> "Asbestos is a known human carcinogen. Extensive epidemiological evidence demonstrates that inhalation of asbestos can lead to pleural and peritoneal mesothelioma, lung cancer, asbestosis, and other diseases which are serious, irreversible, and often fatal. Asbestos has been responsible for the premature deaths of many persons who worked with types of insulating materials now found in some schools." (Federal Register, May 27, 1982, P. 23361, A. Background).

This information on the asbestos hazard was expanded upon in the 1984 Title V - Asbestos School Hazard Abatement Act. (Public Law 98-377, August 11, 1984) Findings and Purposes, Section 502 (a) Findings and Purposes, which again identifies asbestos as a source of "severe or fatal diseases" and then says:

> "Medical evidence has suggested that children may be particularly vulnerable...substantial amounts of asbestos...have been used in school buildings... Asbestos concentration far exceeding normal ambient air levels have been found in school buildings containing...damaged materials.... The presence in school buildings of friable or easily damaged asbestos creates an unwarranted hazard to the health of school children and school employees."

ASHAA Section 502 (a) also includes a significant finding:

> "medical science has not established any minimum level of exposure to asbestos fibers which is considered to be safe."

This statement, and the one about asbestos concentrations in schools exceeding levels in outdoor ambient air are repeated in a number of EPA guidance documents which preceded the 1988 Report to Congress.

2. Guidance Documents

The first EPA asbestos guidance document, Asbestos-Containing Materials in School Buildings (The Orange book, Parts 1 and 2), was issued in March 1979. Copies were required to be kept available in school administrative offices. In a "Dear School Official" opening, The Orange book set the official tone for Federal concern about asbestos in schools:

> "...Individuals who are exposed to asbestos could develop lung cancer or cancers in other parts of the body... Since these materials are found in school buildings, we at EPA are particularly concerned with exposure of school children... The enclosed manuals were prepared to...outline the steps you and the schools in your district can take to...protect students and school personnel from exposure."

The Orange book's first chapter contains a number of risk-related statements which are cited here, at some length, because they serve as a baseline against which to compare future guidance information (Chapter 1, P.1):

> "Some asbestos levels measured in school buildings have even been shown to briefly exceed the current Federal workplace exposure level standards..."
>
> "EPA and the scientific community believe that any exposure to asbestos involves some health risk. No safe level of exposure (threshold exposure level) has been established. Further, it is impossible at this time to estimate the degree of risk associated with low level exposure."
>
> "Where possible all exposure to asbestos should be eliminated or controlled."
>
> "The exposure of children and adolescents to asbestos in the school building occurs early in their life span. Their remaining life expectancy provides a long development period for asbestos-related diseases.
>
> "A large number of students can be exposed at one time to asbestos that is released from asbestos-containing materials present in the school building. The duration of the exposure is of concern since school children attend school daily for most of the year."
>
> "The school population is very active. Certain asbestos-containing materials can be damaged during school activities and as a result of the capricious behavior of students... Many cases of badly damaged asbestos-containing materials have been found in schools."

And in Part 2:

> "Asbestos fibers, even in low concentration, may have carcinogenic potential, and a biologic activity that may persist for the lifetime of the exposed host." (P. I-1-1)
>
> "Environmental contamination from asbestos containing surfaces occurs not only during construction and demolition, but also throughout the entire life of the structure." (P. I-1-4)

> "For buildings with deteriorating asbestos material, however, quiet activity contamination levels may be significantly higher than outdoor ambient air levels." (P. I-2-8)

The Orange book Part 2 (which is cited in at least one school publication as advocating removal) also sets the stage for its sections on response actions with such statements as:

> "Environmental contamination from asbestos can occur not only during construction and demolition, but also throughout the life of the structure (P.I-4); "The rate of fiber dispersal in fallout is continuous, low level, and long lived. Fallout may occur without physical disruption of the fiber-bearing materials and may simply be a function of degradation of the adhesive (P I-2-5)... "Routine activities in a structure containing sprayed asbestos surfaces will usually result in elevated fiber levels" (P I-2-8)... "Maintenance work...may also result in exposures that exceed regulatory limits established by OSHA."

(Note: According to OTS, the statements about asbestos fallout quote above are not supported by scientific evidence and should possibly be viewed as examples of early over-statement of the asbestos-in-buildings danger.)

The next page deals with asbestos-related diseases at considerable length.

<u>Guidance for Controlling Friable Asbestos-Containing Materials in Buildings</u> (The Blue book), published in March 1983, reiterates statements about exposure to airborne asbestos regardless of level is a health risk, that children and young adults are most at risk, and adds:

> "Prevalent levels of airborne asbestos inside buildings where asbestos-containing materials are present may exceed outdoor levels by a factor of 100.(p. viii) As to low level exposure, it adds, "the risk of cancer is of greater concern at low levels than the risk of asbestosis," (P. 1-1) and, "..asbestos workplace studies suggest that a child exposed from age 5 to 10 has at least 10 times the chance of developing mesothelioma as does an adult exposed to the same amount of asbestos between ages 35 and 40." (P.1-1)

The Blue book has pictures of damaged gym ceilings and a hole made by the top of a flagpole standard. (P. 3-9,3-10)

Two years later, in 1985, three different guidance publications reiterated the asbestos exposure health risk threat. Asbestos Waste Management Guidance - Generation, Transport, Disposal, issued in May by OSW, not OTS, and aimed primarily at those involved in disposing of asbestos wastes, devotes almost three pages to asbestos-related health hazards. It opens with the familiar statement of EPA concern about asbestos dating back to the early 1970s, and that the concern is based on medical evidence. Asbestos in Buildings - Guidance for Service and Maintenance Personnel, issued in July, also emphasizes health risks.

The most significant of the three 1985 publications is Guidance for Controlling Asbestos-Containing Materials in Buildings (The Purple book). This publication, which is described in a note to school districts on page ii as being retained instead of the Orange book to satisfy the requirements of the TSCA Asbestos-In-Schools rules.

The Purple book represents the beginning of OTS' attempt to put asbestos risks in a more balanced perspective. Its wording for the first time, softens the degree of risk:

> "The presence of asbestos in a building does not mean that health of building occupants is necessarily endangered. As long as asbestos containing material (ACM) remains in good condition and is not disturbed, exposure is unlikely. (Note: This assertion conflicts with the earlier statement about fiber fallout which appeared in the Orange book and is considered questionable.) When building maintenance, repair, renovation or other activities disturb ACM, if it is damaged, asbestos fibers are released, creating a potential hazard... Although not required to do so by federal law, the prudent building owner will take steps to limit building occupants' exposure to airborne asbestos." (P.S-1)

Of schools, the Purple book says:

> "Prevalent concentrations of airborne asbestos in a sample of school buildings was 10 to 100 times higher than outdoors. At the same time, asbestos levels in the schools were 10,000 to 100,000

times lower than pre-1972 levels in asbestos insulation workplaces." (P. 1-2), and "also, asbestos exposure in children is of special concern since they have a greater remaining lifespan than adults, their lifetime risk of develop mesothelioma is greater. Avoiding unnecessary exposure to asbestos is prudent."(P. 1-2)

3. Other EPA Publications

Other EPA publications, not specifically related to ASHAA, AHERA or the NESHAP, also pictured asbestos as a health hazard over this same time period. For example, the EPA Journal, which to a large measure mirrors the Agency's programs and major concerns, published a number of articles on asbestos and asbestos regulatory programs, asbestos in the home, asbestos enforcement, asbestos-related training. As early as December 1983, in an EPA Journal article entitled "Dealing with Toxics: Present and Future," then-Deputy Administrator Al Alm wrote:

> "We are evaluating our current asbestos control program to see how effective it has been in reducing public health risk, and are conducting a survey of asbestos in public buildings to assess the level of health danger that represents. We will be evaluating more extensive regulation of this dangerous substance."

In this one paragraph, Alm used the words health, risk, danger, and dangerous.

The first major EPA Journal article on asbestos appeared in May 1984, under the title, "Twenty Lessons from Asbestos.: A Bitter Harvest of Scientific Information." It was written by Dr. Irving Selikoff, a leader in the asbestos-related medical field. He wrote in terms of 10,000 deaths so far, and over 100,000 more to come. Dealing with EPA's asbestos-in-schools efforts, he wrote:

> "Lack of "concern about very low levels seems somewhat out of touch with reality while some schools have levels of 100 to 1000 nanongrams and while maintenance and repair work on asbestos materials is often undertaken without precautions or supervision."

That same issue of the EPA Journal, coincidentally, had a short news item in its "Update" section about penalties assessed against the Diocese of Pittsburgh and the

Southeastern City Schools in Grove City, Ohio, for violating EPA's then existing school asbestos rule. The story also mentioned complaints against schools in New Hampshire, Philadelphia, PA, Cheyenne, WY, and Lebanon, OH. Succeeding issues had additional stories about EPA enforcement against schools around the country. Over the years, other stories on asbestos also included information about the substance being dangerous and a carcinogen. Such information also appeared in all EPA news releases about asbestos matters.

In the June 1984 Environmental Progress and Challenges: An EPA Perspective, the Air section, includes asbestos health effects on a chart (P. 12, Figure A , and in the Toxics section (Pp. 110-113) after describing the health effects at length says "asbestos is known to be a health threat to millions of people," among them school children, teachers and others in schools, and notes that "of particular concern is the exposure of children to asbestos." The section also describes what EPA was then doing to "safeguard" children.

b. Post-AHERA (1986-1987)

1. Legislation and Regulations

On October 22, 1986, the Asbestos Hazard Emergency Response Act (Public Law 99-519) continued the emphasis on potential dangers, starting with the words "Emergency Response" in its title, and with such statements as:

> "The danger of exposure to asbestos continues to exist in schools and some exposure actually may have increased due to the lack of Federal standards and improper response action." (Section 201:(a)(1))

The EPA's comparable statement, in the October 30, 1987 Asbestos-Containing Materials in School Final Rule and Notice (AHERA rules) (Federal Register, October 30, 1987) under Supplementary Information, D., Basis for Decision,(page 41829) is more subdued:

> "EPA's analysis of risk placed in the rule-making record when the proposed rule was issued shows that asbestos in schools could present a risk or concern and that the measures required by this rule are necessary to protect public health and the environment."

2. Guidance Documents

The one major guidance document issued during this time period, Asbestos in Schools - A Guide to New Federal Requirements for Local Education Agencies, did not discuss the dangers of asbestos exposure except within the specific context of abatement response actions. Its emphasis is explaining the AHERA regulations. Another publication, 100 Commonly Asked Questions About the New AHERA Asbestos-in-Schools Rule, did not include questions about the dangers of asbestos exposure or the question of whether asbestos should be removed or otherwise managed.

3. Other EPA Materials

During this period, no additional documents were issued other than fact sheets to go with the rules, but EPA Journal articles and Agency news releases continued to refer to asbestos as health-threatening and a carcinogen.

c. Since the Report to Congress (1988 to Present)

1. Legislation and Regulations

The following year, the February, 1988 EPA Report to Congress, EPA Study of Asbestos-Containing Materials in Public Buildings set the stage for future differences between early and later EPA appraisals of the risk involved, and the more direct advocacy of asbestos management in place instead of removal. While reiterating the health hazards presented by asbestos exposure and expanding upon the danger to school children posed by asbestos, the report also deals with other studies, including one made in 1987 (Hatfield, Stockrahm, Chesson, 1987, for OTS)(Appendix 2, P. 2-1) that found the indoor air asbestos levels in 43 federal buildings in six states were the comparable to levels in the ambient air outside. This indication that the problems in buildings other than schools might not be as dangerous notwithstanding, the report says, service workers "appear to be equally at risk, whether employed in public or commercial buildings or in schools." (P.7)

In dealing with the schools versus public buildings exposure issue, the report says:

> "The potential for damage or disturbance in schools might be greater than in many other buildings, given the nature of the occupants (children) and higher expected level of activity.

> (P. 7)... It is difficult to make comparisons between schools and nonschool buildings with regard to exposure and risk (P.7)... A proportional risk model developed by the Agency suggests that elimination of asbestos exposures in schools might significantly reduce risk for populations later exposed in public and commercial buildings." (P.7)

The report includes a letter from then EPA Administrator Lee M. Thomas transmitting the report to the President of the Senate and the Speaker of the House, which concludes, (P. 5 of letter):

> "...Asbestos in commercial buildings, like asbestos in schools, represents a potential health hazard that deserves careful attention. However, we need to continue to place our primary focus on asbestos in schools... Children, since they have the longest life expectancy, would appear to incur the greatest risk... Children also spend a great deal of time in school where any asbestos is especially susceptible to disturbance by the occupants..."

Two other EPA rules round out the risk picture presented in laws and regulations: The first was issued by OAQPS (not OTS). The second was issued by OTS.

In January, 1989, the **Asbestos NESHAPS Revision, Including Disposal of Asbestos Containing Materials Removed from Schools; Notice of Proposed Rule Revision..48 CFR Parts 61 and 763** (Federal Register, January 10, 1989 P.912)) says:

> "The existing standard and proposed amendments...are based on the Administrator's determination that asbestos presents a significant risk to human health as a result of air emissions...and is therefore a hazardous air pollutant."

And, in July, the **Asbestos: Manufacture, Importation, Processing, and Distribution in Commerce Prohibitions; Final Rule (40 CFR Part 763** (Federal Register, July 12, 1989):

> "EPA is issuing this rule to reduce the unreasonable risks presented to human health by exposure to asbestos during activities involving these products." (P.29460)

The phrase, "unreasonable risk" appears a number of times. Considering the wide publicity given this "ban" on asbestos, this rule no doubt reinforced school officials' and community concerns about asbestos in their schools, even though it was published after AHERA-required inspections and management plans were completed and the rule really did not affect them.

2. Guidance Documents

The ABC's of Asbestos in Schools, published in June 1989, begins with, "asbestos fibers can cause serious health problems," and reiterates EPA's concern for children, but, like some of its predecessors, links asbestos exposure to exposure to cigarette smoke and repeats, "much uncertainty surrounds the risk from exposure to low levels of asbestos fibers." (P.2)

A key element of EPA's communications about asbestos in the most recent time period is the repetition of the "Five Facts," a summary of EPA's recent concept of the asbestos-in-buildings exposure risk, and the Agency's emerging emphasis on management-in place as apposed to removal. The "Five Facts" were first used by Office of Pesticides and Toxic Substances' Assistant Administrator Linda Fisher in replying to the Science Magazine article (see below), while testifying before the House Subcommittee on Health and Safety Materials of the Committee on Education and Labor on April 3, 1990. She did not dwell on specific health concerns, using instead a statement used repeatedly over the years in testimony by EPA officials:

> "Our goals, and those of this subcommittee, remain identical: to minimize the inhalation of asbestos which is in place in school buildings."

As to the degree of risk, she said, (page 10):

> "With respect to the so-called 'one fiber can kill' image, the present scientific evidence will not allow us to state unequivocally that there is a level of exposure below which there is a zero risk, but the risk in fact could be negligible or even zero... While scientists have been unable to agree on a level of asbestos exposure at which we, as public policy makers, can confidentially say, 'there is no risk,' this does not mean that all or any exposure is inherently dangerous. To the contrary, almost every day we are exposed to some prevailing level of asbestos fibers in buildings or experience some

> ambient level in the outdoor air. And, based upon available data, very few among us, given existing controls, have contracted or will ever contract an asbestos-related disease at these low prevailing levels....present evidence suggests that building occupants face only very slight risk. Severe health problems attributed to asbestos exposure have generally been experienced by workers in industries...where they were constantly exposed to very high fiber levels in the air..."

In guidance materials, the Five Facts surfaced in a truncated version in the Foreword to the Green book, Managing Asbestos in Place. A Building Owner's Guide to Operations and Maintenance Problems for Asbestos-Containing Materials, published in July 1990. This guidance document continued the qualification of asbestos exposure risk that began with the Purple book:

> "Fact One: Although asbestos is hazardous, the risk of asbestos-related diseases depends upon exposure to airborne asbestos fibers...at very low exposure levels, the risk may be negligible or zero... Fact Two: Based upon the available data, the average airborne levels in buildings seem to be very low. Accordingly, the health risk to most building occupants also appears to be very low. (Green book, pp vii, viii)."

The Foreword which contains the Five Facts does not discuss potential health effects, although they are discussed in a subsequent background section on Page 2. The Green book says virtually nothing about schools (except for a brief paragraph on AHERA) and a slightly longer section on AHERA-required inspections. It says, among other things:

> "Whenever we discuss the risk posed by asbestos we must keep in mind that asbestos fibers can be found nearly everywhere in our environment (usually at very low levels. There is, at this time, insufficient information concerning health effects resulting from low-level asbestos exposure, either from exposures in buildings or from our environment. This makes it difficult to accurately assess the magnitude of cancer risk for building occupants, tenants, and building maintenance and custodial workers. Although in general the risk likely to be negligible for occupants, health concerns remain, particularly for the building's custodial and maintenance workers." (P.2)

Although the Green book was not written for schools per se, it was sent to 44,000 LEAs with a covering letter calling it "the most comprehensive asbestos guide published by the U.S. Environmental Protection Agency (EPA) since 1985." This claim notwithstanding, it does not include any references to previously published information about school children being especially vulnerable, asbestos levels in schools being higher than the ambient air outside, or other information about the propensity of in-school activities for damaging asbestos that appeared in earlier guidance or, in part, in the ABCs and the Purple book (still the guidance of record, to which the Green book is a supplement).

While the Five Facts continued to be used in other testimony and letters to the editor or other articles in which EPA refuted attacks on the Agency's asbestos policy stemming from or based on the Science article or comparable sources, the only other EPA guidance document in which they appear is the March 6, 1991 memorandum from Administrator Reilly, An Advisory to the Public on Asbestos in Buildings, which is reviewed in the section of this document dealing with the period after the 1988 EPA Report to Congress.

Another major publication is Environmental Hazards in Your School, published in October 1990, and dealing with asbestos, radon, and lead in drinking water. On page 2, it says, "EPA estimates that there are asbestos-containing materials in most of the nation's approximately 107,000 primary and secondary schools." (Note: other EPA publications use figures ranging from 31,000 to 40,000-plus, and on page 4, this same publication puts the number at 44,900.) The problem with the figures may be that different figures may represent LEAs or individual schools, or schools with friable or nonfriable asbestos.

On page 3, the publication says:

> "Asbestos fibers can cause serious health problems...uncertainty continues to surround the probability of malignancies occurring at low levels of exposure. Low level exposure would include average exposure to asbestos fibers in schools and buildings. Due to lack of reliable exposure data extracted from epidemiological studies and the absence of an exposure threshold, the fact that school children and custodial workers are exposed to any amount of asbestos fibers continues to constitute a concern."