Dissemination of Asbestos Controls to the Automotive Service Industry: Final Project Report

on

A Cooperative Agreement Between
The Ohio Technology Transfer Organization and
The National Institute for Occupational Safety and Health

by

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INTRODUCTION

Amendments to the Stevenson-Wydler Act have improved awareness of technology transfer goals and methods among federal laboratories and agencies, and have inspired development of new links between those agencies and technology dissemination groups. These links should lead to more efficient transfer of technologies from the laboratories to the private sector.

Toward that end, the National Institute for Occupational Safety and Health (NIOSH) in 1988 awarded funds, through a cooperative agreement, to the Ohio Technology Transfer Organization (OTTO). The objective of the funded project was twofold:

- to assist the transfer of information about and promote the use of existing technologies that abate the risk of asbestos dust exposure to mechanics during automotive brake repair, and
- to demonstrate the use of state-sponsored assistance programs to disseminate control technologies developed by NIOSH.

The Ohio State University/OTTO Research-Resource office(OSU/OTTO) served as lead institution on the three-year project.

BACKGROUND

This agreement grew from NIOSH staff interaction with the Ohio Technology Transfer Organization (OTTO). OTTO, with its unique and comprehensive access to small business, seemed to be an ideal system for dissemination of NIOSH technical information. When the project began, OTTO's field staff consisted of 34 agents at 28 two-year technical and community colleges and universities throughout Ohio. Funded by the legislature through the Ohio Department of Development, OTTO functions as the state's industrial extension service by making college, university, and other expertise available to Ohio businesses. The OSU/OTTO office is institutionally linked, through The Ohio State University's Engineering Experiment Station, to the Transportation Research Center, a respected automotive testing facility that could contribute to the project.

The NIOSH Report

The basis for the information to be disseminated, or transferred, was contained in the NIOSH report, "Control of Asbestos Exposure During Brake Drum Service," [1] which reports results of field studies on various available methods for controlling asbestos exposure in the repair of drum brakes. It details results of field studies on four control methods:

Vacuum enclosure systems: A glove box surrounds the brake drum and backing plate and is connected to a vacuum equipped with a high efficiency

particulate air (HEPA) filter. Compressed air is used to dislodge brake dust during the disassembly of the drum from the axle. The vacuum removes the dust from the enclosure.

A vacuum only method: A HEPA filter-equipped vacuum collects loose dust throughout the repair process.

Wet brush recycle systems: A solvent or water-based cleaning solution is used to capture and contain brake dust. A low pressure pump moves the liquid through a hose attached to a brush. The brush directs the flow of liquid and cleans the brake parts. The fluid collects in a basin below the brake and is recycled back to the pump.

The aerosol spray method: Pressurized solvent is used to clean the brake assembly; a catch basin under the assembly collects the solvent.

Additionally, the NIOSH report details the work practices associated with the proper use of each of these control methods.

The results of the NIOSH study indicated that each of the studied methods (in conjunction with the work practices used) controlled worker exposures to a level below 20 percent of the NIOSH-recommended exposure limit and to less than 10 percent of the OSHA-permissible exposure limit. The report indicated, therefore, that control methods were commercially available to protect brake mechanics from asbestos exposure.

A Technology Transfer Model

OSU/OTTO began the project with an interest in understanding the technology transfer process in terms of a model or framework developed at OSU. The basis for the model came from technology transfer literature and OSU/OTTO experience.[2,3] Throughout the grant period, OSU/OTTO staff worked to refine and implement that generic model using the project as a prototype, checking the project progress against the model continuously.

Two elements of the model or framework illuminated the project.

1. The innovation-decision continuum

The first element, an innovation-decision continuum, illustrates the stages an individual or organization goes through when progressing toward the adoption of a new technology.[4]

Awareness: The awareness phase represents the potential receiver's first exposure to an innovation, new idea, or technology. The receiver has acquired some understanding of how it functions.

Persuasion: At the persuasion or attitude formation phase, a person becomes interested in the innovation or idea and actively seeks additional information about the innovation or idea.

Trial: In the trial or decision phase, the individual is at the point of adoption of the innovation or idea.

Confirmation: The fourth or confirmation phase is where the individual or organization seeks information that the right decision was made to adopt or not adopt the new technology.

The facilitator of the transfer must be sensitive to where the receiver of new information is on this continuum to effectively match the message to the audience. It is the job of the facilitator to represent the sender and provide the right message in the right form at the right time to help the receiver move from stage to stage.

2. Cultural variables

The second element of a technology transfer framework deals with aspects of culture. This element is adopted from a predictive model for technology transfer.[5] The sender of information or technologies functions within a culture, in terms of economics, technology, and institutional structure and function, different from that of the receiver. For example, although the NIOSH report "Control of Asbestos Exposure During Brake Drum Service," may satisfy organizational and institutional demands within the culture of NIOSH, it may not be accessible to auto mechanics. The success of a dissemination or transfer effort depends on how information created in one culture, with its unique institutional structures and functions, can be translated to fit quite a different culture.

The culture of the potential "receiver" of an innovation can be broken down into various features which can be described with the answers to questions in the following areas.

- **Method of Information Documentation**
  What is the method of information documentation, or how is information presented? For example, NIOSH may report results of studies in lengthy technical report formats, whereas automobile mechanics may be receiving information through brief how-to bulletins.

- **Distribution System**
  How is information distributed and through what channels (associations, magazines, etc.)? Once again, NIOSH may distribute the results of its research through technical journals and through professional public health meetings. Automobile mechanics would not be part of this distribution channel.

- **Capacity of the Receiver**
  How prepared is the receiver to receive, understand, and implement the message? This question involves assessing organizational venturesomeness, staff education, age, experience, and other like elements.

- **Presence of Champions**
  Are there "champions" for new ideas who create peer pressure to adopt the innovation? Within an industry or firm, the presence of a recognized leader can promote or inhibit the adoption of an innovation or idea. If the leader is champion of the idea or innovation, it is much more likely to be adopted. Conversely, if leaders are not champions, it is less likely to be adopted.

- **Credibility of the Message**
  How credible is the message and the messenger? Who is credible to the potential receiver of an innovation?

- **Reward**
  Does the receiver perceive a reward for the adoption of a new idea or technology? Does the culture of the receiver value innovation? Does that culture provide incentives to change?

- **Willingness to be Helped**
  Is the receiver willing to be helped?

Answers to these questions can describe the receiver of a new technology or idea. They must be understood by the sender in order to create an effective link to the receiver. The job of the facilitator (in this case, OTTO) is to translate these elements back and forth to enhance communication between the sender (NIOSH) and the receiver (auto mechanics) so that the message is transferred with an optimum likelihood of acceptance.

Within this conceptual framework as a background we began the research phase of the project.

RESEARCH

OTTO's Strategic and Targeted Technologies Committee, composed of OTTO agents from all over the state, served as a core task group and shaped OTTO's initial response to the NIOSH proposal. The committee defined and planned the project, identifying four strategic steps, and charged OSU/OTTO to:

- define the potential target population by using associations, trade groups, and other sources,

- define existing sources of information and expertise currently used by the target population,

- identify appropriate information about control technologies, including vendor information, and

- Develop a media matrix to deliver information to the target population.

Further, the committee decided that:

- The market for the information would be segmented, with the first audience being trainers in vocational education in the state's secondary schools and two-year and technical institutions. As teachers of tomorrow's mechanics, this group would help to educate students who would then join the work force as informed technicians already accustomed to safety practices, thereby creating a demand for safe work practices in the workplace. They would also serve as one conduit to the target population of workers at risk.

- The first step should be a workshop for trainers.

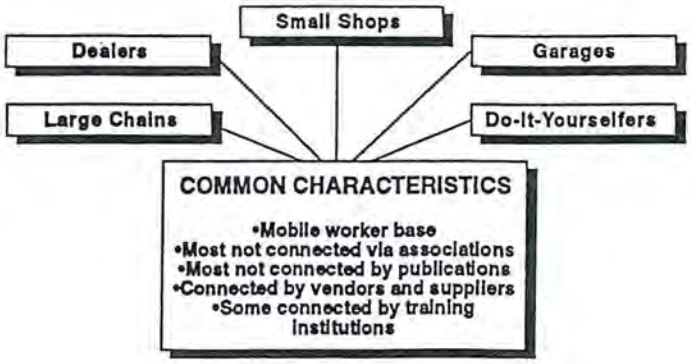
- A member of the committee *(Lewis Bennett, Owens Technical College)*, would join OSU/OTTO staff in further planning strategies and events for the project.

To research the market (the automotive brake service industry) for the NIOSH asbestos control information, OSU/OTTO concurrently characterized the brake service industry, created a board of advisors for the project, surveyed brake repair workers, and surveyed automotive technology trainers.

This phase of the project concluded with a workshop for automotive technology trainers, a workshop intended to solicit more detailed information from trainers and to verify the results of market research.

Characterization of Industry

Practitioners of brake repair can be divided into several groups including small shops, large chains, dealer service departments, and home mechanics or do-it-yourselfers. All had particular characteristics which could be problematic regarding any dissemination effort.



The work force is mobile; association membership represents a relatively small percentage of total shops; and no publications seem to be commonly received by a significant percentage of shops. People in the field seem to have no universal pipeline and cite different information resources including the trade magazines, vendors, government agencies, and mass media.

The salient institutional linkage appeared to be training institutions, such as technical colleges and vocational schools. In addition, despite a relatively small membership, associations appeared to be a key linker in at least part of the industry. Their boards represented resources for the project and their memberships represented a direct, organized path to the audience of workers at risk.

Advisory Board

In 1989, OSU/OTTO assembled a project advisory board composed of representatives of trade, service, educational, and government organizations determined to be credible to both workers and educators. Membership consisted of representatives from:

- The Ohio Automotive Service Association, or ASA
- The Ohio Automotive Wholesalers Association, or AWA (parts suppliers)
- The Ohio Department of Education
- The Ohio Industrial Commission
- The Ohio State University Department of Environmental Health and Safety
- NIOSH, and
- the OTTO field agent staff.

Association representatives provided a conduit to and from the national associations, as well as their Ohio membership. The Department of Education and Industrial Commission representatives provided technical expertise, a vast library of occupational health risk literature, and contacts within the public health infrastructure. The representatives from OSU's Department of Environmental Health and Safety, one an M.D., provided additional expertise, particularly in the area of asbestos-related diseases. The OTTO agent field staff provided guidance on how to coordinate the project with the local needs of the agents. The board made planning and strategy decisions throughout the project, and each member contributed to the workshop for trainers in October of 1989.

Worker Survey

Surveys indicated that though mechanics claimed to feel adequately informed about asbestos hazards and controls, those controls are not taught or practiced in any consistent or safe way.

A small survey of brake mechanics revealed:

- Workers know that asbestos exposure is dangerous, but not how dangerous.
- Few take any protective measures.
- No common communication route reaches all mechanics.
- They view safety measures as expensive, in terms of both time and money.
- There is a feeling of invulnerability on the part of auto mechanics.
- Since the government isn't forcing shops to adopt controls through regulations, mechanics feel no strong incentive to use them.

The capacity of automobile mechanics to receive new information about safer work practices is limited because they tend to be tradition-oriented and because the credibility of the hazard message is not high. They had been doing the job for twenty years, went the reasoning, and they are not sick yet, so what's the problem?

This characterization suggested a challenge in transmitting information to the eventual target population of workers at risk. It was clear that, as the industry characterization suggested, workers suffer continued exposure to asbestos in spite of available control methods because

(a.) brake jobs are done in small businesses with high employee turnover,
(b.) asbestos exposure causes no immediate or acute symptoms, and
(c.) resistance to behavior modification in general is common.

Trainer survey

Trainers expressed many of the same attitudes and opinions as workers. They said they taught students that asbestos was dangerous, but were not giving students details on how they could be exposed and how they could protect themselves from exposure.

Trainers expressed a need for a package of materials to teach students about asbestos exposure in brake repair.

Training for Trainers Workshop

The research stage of the project ended with the workshop for vocational teachers of automobile mechanics in October of 1989. The workshop was designed to educate the trainers about safe work practices and controls, and to solicit their thoughts about how best to reach workers at risk. As incentives, the workshop offered continuing education credits; a copy of the United States Environmental Protection Agency's asbestos control video, Don't Blow It; a poster for the classroom or workplace; and a comprehensive file of materials relating to asbestos hazards and controls.

The fact that the workshop took place at the Transportation Research Center (TRC) near Marysville, Ohio provided further incentive. TRC facilities include a six-mile closed oval course and crash testing laboratories. The TRC was used as a draw for participants

(the workshop included a tour of the facility) and because TRC staff agreed to demonstrate an asbestos control.

Twenty-five trainers from throughout the state attended. A manufacturer of brake repair control equipment also attended. Project board members made presentations about the properties of asbestos, mechanisms of asbestos-related disease, and the effectiveness of personal protection equipment. NIOSH personnel presented the various available engineering controls and discussed their effectiveness and use.

The surveys had indicated that both mechanics and trainers were confident about their knowledge and practices, yet they also made clear the facts that the industry had not taken the message of hazards to heart and that controls were not practiced regularly or well by either group. Therefore, one of our most important goals was to solicit trainers' contributions on how to approach the mechanics. We asked for their opinions, thoughts, and strategies on several issues, including

- the content and style of any products we might develop for independent mechanics
- the content and style of information for use in their classrooms and labs, and
- the role of the OTTO agents in disseminating asbestos control information.

This inspired an extensive roundtable discussion, which highlighted the challenges to the development of effective dissemination tools.

Challenges

The cultural element of the technology transfer model provides a convenient form with which to summarize those challenges, many of which were also suggested in the survey results. For instance, trainers advised that the relatively complex messages about asbestos properties and related diseases, and information about the effectiveness of various controls, were too long and complex for the audience. They said that messages must be made short and simple in order to be effective. (In fact, the trainers said that short wasn't short enough.) In terms of the cultural element of our technology transfer model, we drew the following conclusions.

Method of Information Documentation

Message must be short, simple, and illustrated.

Distribution System

Nothing primary, must use multiple routes.

Capacity of the Receiver

The group tends to be tradition-oriented, and tends also to view control practices as prohibitively expensive.

Presence of Champions

Few champions exist in the industry, because the industry is so heteroge-

neous. Champions might be made, however, from trainers and association members who might ultimately spread the word.

Credibility of the Message
Low. Health risks are remote and insidious, exposure has no immediate consequence, and because of the mobility of the work force, workers have not seen the consequence of disease in fellow workers over time.

Reward
None perceived to be of any practical or motivational significance.

Willingness to be Helped
General resistance to behavior change.

Another key challenge was overcoming misinformation. For instance, it was widely felt that substitute friction materials eliminated the need for controls. In fact, existing materials in the pipeline and questions about the safety of substitutes keep the issue alive. Until further evidence proves otherwise, the experts advise using exactly the same safety precautions with substitute materials as they recommend using with asbestos. It was clear that this would have to be part of our message.

PRODUCT DEVELOPMENT

After the trainers workshop, OSU/OTTO developed a plan to create and disseminate a comprehensive yet brief print product emphasizing asbestos hazards in brake repair. The product would be generic, aimed at anyone at risk, and it would be used in all circumstances to introduce the subject. We classified four dissemination routes for that product:

Direct: distribution to mechanics and shop owners through OTTO agents, associations, direct mail, and trade magazines.

Through management: distribution through association meetings, so association members could take information back to their workers and through workshops, where shop owners would learn to become champions of the message

Through trainers: product should be appropriate for use in schools and workshops.

Through parts suppliers: as part of brake part packaging, at point- of-sale displays, and through vendors and manufacturers of control equipment. (This would also cover the do-it-yourself market for the information.)

Project advisors enhanced and approved the plan, and some attendees from the training workshop contributed criticism.

The Yellow Bulletin

The final product, which came to be known as the yellow bulletin, represents a synthesis of technical and medical literature and advice. Sources included NIOSH and EPA reports, materials and notes from equipment manufacturers, material from advisory board members, and literature in the psychology of health risk messages.[6]

The bulletin makes a complex message simple, and is designed for all audiences and contexts; that is, it can be used at the point of sale, given or sent directly to mechanics, or distributed through other routes. Ideal circumstances would include some personal contact and enhancement of the message through further information, but on the assumption that for some individuals (like the do-it-yourselfers) there may be no further contact with the message, the yellow bulletin can stand alone.

The design of the bulletin was based upon the advice of the trainers, the association memberships, and the board, as well as general marketing techniques. The colors command attention, the layour is varied, but simple, and blocks of text are interrupted by illustration.

The bulletin makes five basic points:

- Asbestos can cause fatal diseases years after exposure.
- There is no minimum safe exposure.
- Asbestos is used in clutch and brake materials.
- Anyone working on brakes needs protection from asbestos.
- Its easy to protect yourself.

In addition, the back of the yellow bulletin describes control methods in principal and provides a brief list of safety tips.

The bulletin was reviewed and approved by the project advisory board, the original NIOSH research team, and several trainers. It was intended to be used with the widest audience as our most generic means of sending the message.

DISSEMINATION

The technology transfer model

How does the yellow bulletin fit into the innovation continuum?

We knew, to begin with, as a result of the survey, that mechanics had some *awareness* of the asbestos problem associated with brake repair. This might have come from general media (newspapers, television, trade magazines, etc.) or from word of mouth. In most cases, the message was probably mixed with a great deal of confusion and misinformation, but it served as a foundation of awareness of the problem.

The yellow bulletin was designed to heighten and focus that awareness, and lead mechanics to the *persuasion* stage of the continuum. We knew, however, that the bulletin alone would not be likely to persuade them to *try* a control technology. Peer pressure, or the creation of champions, would help to change behavior, and those elements grow from personal contacts. Therefore we planned a prototype workshop to provide mechanics and shop owners with more information to move them to the *trial* stage of the technology transfer continuum.

Toledo Workshop

We chose Toledo as the site of the workshop, in part because of the dedication and interest of the Toledo OTTO agent, who had served the project from the beginning. The area seemed ideal, too, because of its high concentration of automotive shops and general activity in the industry. Memberships of both the Automotive Wholesalers Association (AWA) and the Automotive Service Association (ASA) are relatively active there.

In order to gauge the interest of the Toledo area mechanics, we contacted the local president of the ASA and made a presentation at one of their meetings. At that meeting it was obvious that members were interested in the subject and that they viewed the local community college as a respected and legitimate institution. The local OTTO college, Owens Technical College, therefore offered the ideal location for the prototype workshop.

Two mailings of about 800 each were made to Toledo area mechanics and automotive parts wholesalers. This mailing advertised the workshop and summarized the yellow bulletin.

At the workshop, the OSU/OTTO office presented information about the properties and hazards associated with asbestos. A NIOSH representative reported on the effectiveness of the various control methods. The safety manager for Midas International, the franchiser of the nation's largest chain of brake and muffler repair shops, presented information from the brake repair practitioner's point of view.

The Midas safety manager also demonstrated, and commented on the relative merits of control equipment, including two aqueous cleaner, wet brush recycling systems from different manufacturers. A representative from Safety Clean demonstrated a solvent-based wet brush recycling system, and a Hako representatives demonstrated a vacuum enclosure system.

Attendees had an opportunity to ask questions in the general workshop format and to speak with presenters one-on-one.

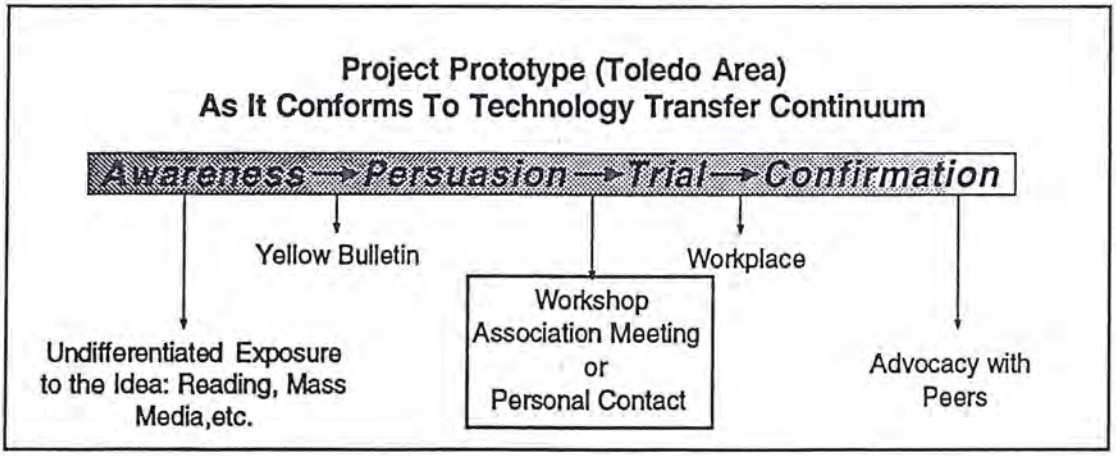
We left the workshop with the following points confirmed.

- Personal contact, demonstrations, and the opportunity to have questions answered by someone viewed as an expert (through association meetings, workshops, visits from OTTO agents or other representatives of the project) can persuade receivers to adopt some control technology.

- Confirmation of the message (receiving it from more than one source and/ or from a peer who has already tried it) enhances the process.

Attendees indicated that they were more likely to institute control techniques in their shops because of the workshop; they therefore began to move to the trial stage of the technology transfer continuum.

Beyond that stage, OTTO loses some control as an agent of technology transfer. Ideally, the seed of the movement will grow within the workplace and within the peer groups of mechanics. When mechanics champion the cause, the industry will be dramatically more likely to adopt controls.

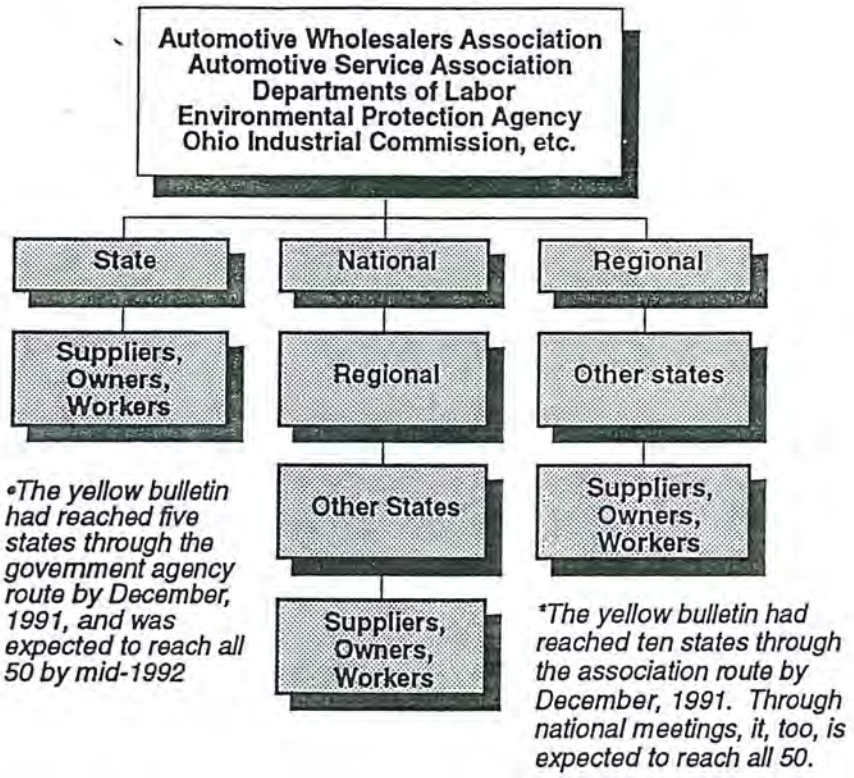


Yellow Bulletin Distribution

The yellow bulletin has been a successful dissemination piece. Through state associations and state agencies it has found its way to regional and national offices and demand for the product has dramatically exceeded expectations. Through the Ohio Automotive Wholesalers Association it has reached mechanics and do-it-yourselfers as a counter hand-out in seven New England states and Ohio. (The AWA route also grew to include the United States Department of Labor, Region VII, an area including Nebraska, Kansas, Missouri, and Iowa.) Through the Ohio Automotive Service Association it has reached mechanics in mailings and through presentations to

members. It was reprinted just before the end of the project with space for a sponsoring organization to identify itself and distribute the bulletin as its own. Distribution, which took place in a relatively short time before the end of the project, followed the pattern below. (Distribution has continued since then through the OSU/OTTO office. Total distribution so far is about 7,000, though receiving organizations had permission to do their own reprints or photocopies, so circulation is likely to be much higher.)

DISSEMINATION NETWORK: MANAGEMENT



•The yellow bulletin had reached five states through the government agency route by December, 1991, and was expected to reach all 50 by mid-1992

**The yellow bulletin had reached ten states through the association route by December, 1991. Through national meetings, it, too, is expected to reach all 50.*

Though the project was originally intended to disseminate control information within Ohio, it grew through the networks of the distributing organizations. Department of Labor staff, AWA staff, and Midas Corporation staff have expressed intentions to include it in mailings and/or presentations to their constituents at the national level during 1992.

Training Materials

Early in the project, trainers had expressed a need for materials to help them teach the hazards of asbesto exposure during brake repair to students. Accordingly, a prototype of course materials was created.

These materials consist of slides and notes that will allow an automotive mechanics instructor to present a lecture on asbsetos hazards and controls.

These materials are not complete, however they will be finalized and distributed by NIOSH personnel.

LESSONS AND RECOMMENDATIONS

The asbestos controls project illustrates several lessons about the transfer of health risk abatement technologies to smaller businesses. Some confirm long-recognized principles; others represent relatively new insights into the process.

1. The process is based on relationships

Demonstrations, personal contact with someone who can answer questions, and trustworthy availability of a resource person help the receiver of a new technology through the adoption process. Especially when the new technology represents a major change in behavior or economics, the receiver needs access to an individual or organization (the facilitator, the sender, or even a vendor)who can help with on-the-spot problem solving.

But perhaps more important were the personal contacts that lead us into important networks. These relationships with the directors of the AWA and ASA provided us with more contacts, legitimacy, and information.

2. The process takes time

Dependent as it is on personal contact, the technology transfer process is really a chain reaction in which each receiver is eventually equipped to be a facilitator for someone else. For a new technology to spread throughout an industry (in the absence of regulations or incentives), this must happen many times.

3. Multiple avenues should be used to reach the target audience

In a heterogeneous industry like automotive repair, no single route will reach enough receivers to alter the behavior of the industry. Therefore, facilitators and senders should analyze and use various approaches to the audience: publications, suppliers, trainers, associations, workshops,etc.

4. Manufacturers and suppliers of equipment should be involved in the process.

A natural ally in the dissemination of control inforamation is a manufacturer of control equipment. Such a manufacturer's livelihood depends on his ability to communicate an awareness of the hazards and the efficacy of his control. He must also create arguments to overcome the objections of potential customers.

Early in the project we contacted Jim Clayton of Clayton and Associates. His company manufactures one of the control systems studied in the original NIOSH report. In fact, automotive brake service asbsetos control devices are the only products Calyton and Associates produces. He was, therefor, highly motivated to become involved in the project: in many ways, the goals of his company were the same as ours.

Clayton contribute to the project by shortening the curve we went through learning to succinctly express the hazards, and prepared us for the objections to controls expressed by mechanics in the brake service industry.

5. Sell the hazard first

In the case of health risk messages, consequences of unprotected behavior are not always recognized — but they can be a significant motivator.

6. Projects like this should stand on their own so that sponsorship of the message can be transferred to any group wanting to disseminate it

The life of projects like this should not be wholly dependant on the originating organization. The sponsorship of the message should be transferable to any willing and interested organization

In this case this became obvious for two reasons: One, the OTTO program changed in terms of its mission, funding, management and size over the project period, and; Two, the reach of OTTO was limited to the state of Ohio.

State of Ohio budgetary woes created a retrenchment or refocusing and downsizing of the Ohio Technology Transfer Organization. From 28 participating institutions, OTTO was reduced to 12. The scope of its mission was narrowed to providing assistance to manufacturing rather than general technical assistance to all businesses. OTTO will not be able to contiue developing this project. Since state run organizations are subject to budgetary and political forces, NIOSH shouldn't count on continuity when it comes to state technology assistance organizations.

The fact that OTTO serves only Ohio businesses was an easier problem to solve. The yellow bulletin has received wide distribution outside of the state. Interested groups received copies of the bulletin, or were supplied computer disks of the bulletin so they could print and distribute the bulletin.

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Appendices

Mailer for 10/30/89 workshop

Agenda for 10/30/89 workshop

Yellow Bulletin

Mailer for 9/25/91 workshop

asbestos in the workplace

a workshop for teachers of automobile mechanics

Asbestos has become a frightening word in recent years. We are doing our best to rid our schools of it to avoid putting our children at risk — and with good reason. We know that exposure to asbestos definitely causes debilitating and often fatal diseases. We also know that these diseases take years to develop. What we *don't* know is how much — or how *little* — exposure to asbestos can cause them. Research shows that there is *no known safe level of exposure*; anyone who works with any quantity of asbestos for any length of time is at risk for developing serious disease later in life.

WORKSHOP INFORMATION

- Date: Monday, October 30, 1989
- Time: 10 a.m. - 5 p.m.
- Place: Holiday Inn, Bellefontaine
- Registration fee: $20
- Registration deadline: October 18
- Registration limited to 30
- Workshop materials include videotape, teaching aids
- Tour of Transportation Research Center & demo of brake technologies
- Course offers continuing ed credit
- For more information, call:

OSU/OTTO
614-292-5485

Since asbestos is used in clutches and brakes, automobile mechanics are particularly at risk. As a teacher of auto mechanics, you are probably aware of the risks of doing brake jobs unprotected, and you may even be teaching safety practices to your students. But when those students go to work, are their employers as careful and concerned?

The Ohio State University office of the Ohio Technology Transfer Organization (OSU/OTTO) and the National Institute for Occupational Safety and Health (NIOSH) need your help to find ways to improve brake and clutch safety practices in small shops. You, as a teacher, are our most vital link to workers at risk. We are interested in your perspective and your ideas on how to reach them — and how to motivate them to protect themselves when they do brake jobs.

We therefore invite you to join us at a workshop on brake technology and asbestos. The agenda will include presentations by experts from trade, service, educational, and government organizations, who will discuss asbestos and its uses, replacement materials, health hazards, laws and standards, personal protection and hygiene, and control methods. Representatives of the Ohio Industrial Commission will explain the evaluation and recommendation procedures they use in garages, and a tour of the Transportation Research Center will include a look at the latest in testing procedures, as well as a demonstration of control methods in brake repair.

Though asbestos is being phased out, it will be years before it's gone. Your advice will help us shape a successful program for mechanics in the meantime. We look forward to hearing from you.

WORKSHOP REGISTRATION

October 30 - Holiday Inn, Bellefontaine - Registration fee: $20.00

NAME _____

SCHOOL _____

ADDRESS _____

PHONE _____

Would you like a copy of the E.P.A. videotape "Don't Blow It"? yes ☐ no ☐

Registration fee enclosed ☐

Will pay at door ☐

Registration forms due by Wednesday, October 18.

Please send to: OSU/OTTO • 1712 Neil Avenue • Columbus OH 43210 • Phone: 614-292-5485

DANGER asbestos

Working on brakes? Think about this:

- **Asbestos can cause fatal diseases years after exposure.**
- **Asbestos is used in clutches and brakes.**
- **Anyone working on brakes needs protection from asbestos.**

We can't see it, smell it, taste it, or feel it, but we know that asbestos can cause debilitating and often fatal diseases. We also know that these diseases take as long as 20 years to develop. What we *don't* know is how much–*or how little*–exposure to asbestos can cause them.

There is *no known safe level of exposure*. Anyone who works with any quantity of asbestos for any length of time risks developing serious disease later in life. And that person puts *others* at risk. Invisible asbestos fibers cling to clothes, hair, and skin. When they become airborne, as they do in natural movement, anyone near that person can inhale them.

Since asbestos is used in clutches and brakes, you may be exposing yourself and your loved ones to that risk. Yet protection from asbestos exposure can be simple and inexpensive. This bulletin will give you the facts about asbestos and how to take care of yourself when working with it.

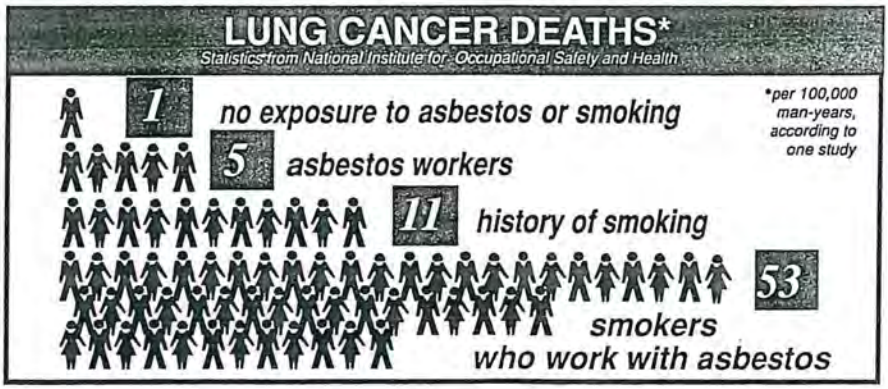
What is asbestos?

Asbestos is a mined mineral. It is a needle-like fiber that is very resistant to pressure and heat, which is why it is used in brakes and clutches.

It is very brittle, and it fractures lengthwise, creating smaller and smaller fibers with sharp, needle-like edges.

You can't see these fibers in the air—some asbestos particles are so small that nearly 200 of them would have to be bundled together to equal the diameter of one human hair.

These invisible particles are in brake dust and you can inhale them right through unapproved protective dust masks. They can then travel through the respiratory system and lodge in the lungs, where they become permanently embedded in lung tissue.



How dangerous is asbestos exposure?

Asbestos fibers are often found at tumor sites in the lung, and exposure to asbestos causes deadly lung diseases. Among these are:

•Lung cancer: About 95% of lung cancer victims die quickly — by the time the disease is detectable by x-ray, it is often widespread. Lung cancer accounts for the largest number of deaths attributed to asbestos exposure, and asbestos is almost as deadly as smoking as a cause of this disease. In fact, a smoker who works with asbestos is 10 times more likely to contract and die from lung cancer than than a non-smoker who works with asbestos.

•Mesothelioma: This deadly cancer is *100% fatal,* usually within one year of diagnosis — and asbestos is the major cause of this disease. No one knows how little it takes. Even *indirect* exposure is deadly. Wives, children, and pets of people who work with asbestos have died just from exposure to the clothes of the worker. This disease damages the lining of the chest and abdominal cavities.

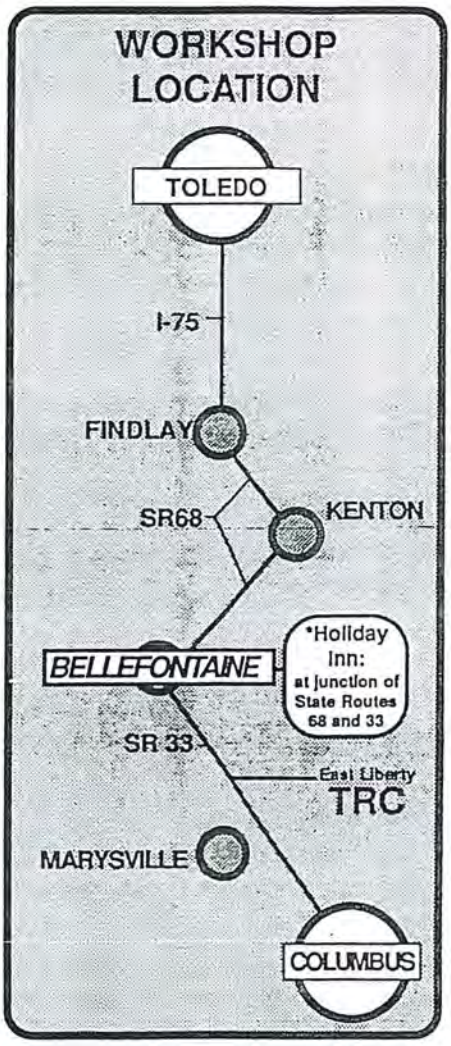
Dangers continued on side 2

OTTO THE OHIO TECHNOLOGY TRANSFER ORGANIZATION

The Ohio Technology Transfer Organization (OTTO) disseminates information, research, and scholarship from Ohio's universities, federal laboratories, and other sources to Ohio's business and industry by means of a network of 34 agents working at 23 two-year institutions and five universities. Resources within the network include two business management specialists, an engineering specialist, and the Ohio State University/OTTO Research-Resource Office, which provides patent services, database searching, engineering expertise, and other special services.

OTTO has a strong understanding of the difficulties small businesses face in finding funding for new ideas, start-up projects, commercialization or expansion, and especially technology transfer. In 1988, its ninth year of operation, OTTO served 3068 Ohio companies, 97% of whom employed fewer than 500. (70% employed fewer than 20, and more than 40% fewer than five.) More than 1100 of 1988 client companies came from the industrial and manufacturing sector. For these clients, OTTO agents addressed 4283 requests for assistance, more than a third of which involved production, production processes, products, or product development. Technical requests include questions about computer applications, energy and conservation, hazardous and toxic wastes, and waste minimization, among others.

OTTO client companies made 1733 changes (adoption of new technologies, change in method of operation, expansion of firm, increased productivity, market expansion, product development, etc.) as a result of OTTO's intervention. Two hundred new Ohio businesses opened in 1988 with OTTO's help — nearly one of every five start-up requests. 719 jobs were reported generated by 1988 activities, and 1296 were reported retained. OTTO agents were able to help their client companies to save 3,215 work days in 1988, and in new product sales, market expansion, cost avoidance, and cost reduction, they helped to add more than $15.6 million to the Ohio economy.



TRANSPORTATION RESEARCH CENTER OF OHIO

Administered by OSU's Engineering Experiment Station, the TRC is a multi-million dollar complex located on 7,500 acres of land at East Liberty, Ohio. TRC provides comprehensive research, development, and testing services and facilities to companies and government agencies in a proprietary and confidential atmosphere.

The facility offers state-of-the art equipment and expertise in all aspects of transportation and mechanics, including new brake materials and technologies. TRC programs are designed to test for safety, energy, fuel economy, emissions, durability, performance, noise, and crash simulation involving all kinds of vehicles and components.

A tour of TRC facilities -- including the 7.5 mile high speed track -- is included in the workshop agenda, and the keynote speaker at the workshop luncheon will be Dr. Walt McPherson, director of the center.

OSU/OTTO
1712 NEIL AVENUE
COLUMBUS OH 43210

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FIRST CLASS MAIL

asbestos in the workplace

a workshop for teachers of automobile mechanics

Sponsored by the Ohio State University office of the Ohio Technology Transfer Organization and the National Institute for Occupational Safety and Health
Monday, October 30, 1989 • Holiday Inn, Bellefontaine, Ohio

AGENDA

9:30:	Coffee and registration
10:00:	Welcome *Chris Gjessing, The Ohio State University office of the Ohio Technology Transfer Organization*
10:15:	Properties, Characteristics, and Uses of Asbestos *Jack Hunter, Ohio Department of Education*
10:45:	Health Hazards Associated with Asbestos Exposure *John Gaeuman, M.D., The Ohio State University Department of Preventive Medicine*
11:15:	Laws, Standards, and Controls *John Sheehy, National Institute for Occupational Safety and Health*
11:45:	Personal Protection and Hygiene for Auto Mechanics *David Kos, The Ohio State University Department of Environmental Occupational Health and Safety*
noon:	Lunch: small group discussion ***Keynote speaker:*** *Stanley C. Frye, Chief Engineer, Project Operations, Transportation Research Center*
1:15:	Leave for Transportation Research Center
1:30:	Tour of TRC including: •A Demonstration of Safety Measures in Brake Changing *TRC Staff* •An Overview of Ohio Industrial Commission Evaluation Procedures *Neil Marquard and Jim Wasil, Ohio Industrial Commission Division of Safety and Hygiene*
3:30:	Return to Holiday Inn for Soft Drinks and Open Discussion of Project
5:00	Wrap-Up and Adjourn

DANGER asbestos

Working on brakes? Think about this:

- Asbestos can cause fatal diseases–*years* after exposure.
- Asbestos is used in clutches and brakes.

Learn about asbestos and how to protect yourself at this 2-hour workshop!

We can't see it, smell it, taste it, or feel it, but we know that asbestos causes debilitating and often fatal diseases that take years to develop. These diseases can be expensive in terms of missed work, decreased productivity, and higher insurance costs.

BRAKE TECHNOLOGY AND ASBESTOS

Workshop Information

- **Date:** Wednesday, September 25
- **Time:** 7:00–9:00 p.m.
- **Place:** Owens Technical College
- **Fee:** $5.00 advance registration
  $7.00 at workshop
- **Register by:** Friday, September 20

For more information, please contact:
Lew Bennett, OTTO Agent
Owens Technical College
419-666-6163

Demonstrations and Refreshments!

Anyone who works with ***any*** quantity of asbestos for ***any*** length of time risks developing serious disease later in life. But, because there is no known safe level of exposure, that person puts ***others*** at risk: co-workers, customers, friends and family. Invisible asbestos fibers cling to clothes, hair, and skin, so anyone near the worker or workspace–even anyone who handles contaminated clothes–can inhale them.

Are your methods *really* safe?

Since asbestos is used in clutches and brakes, automobile mechanics are particularly at risk. As someone who works with brakes, you are probably aware of the risks of doing brake jobs unprotected, and you may even use safety practices in your shop. ***But are you sure the methods you're using are safe?*** And is ***everyone else*** as careful and concerned?

It only takes a minute to be sure–and safety methods are both easy and inexpensive.

The Owens Technical College office of the Ohio Technology Transfer Organization (OTTO), the Ohio State University OTTO office, and the National Institute for Occupational Safety and Health (NIOSH) invite you to a workshop on brake technology and asbestos. The agenda will include presentations on asbestos hazards and controls and demonstrations of the latest control methods for safe brake service.

Though asbestos is being phased out, it will be years before it's gone–and replacement materials may be just as hazardous. This workshop will help you do all brake work safely.

Workshop Registration: Brake Technology and Asbestos

September 25, 1991 • Owens Technical College • $5.00 advance registration/$7 at workshop

NAME _____

ADDRESS _____

_____

_____

SS#: ____/____/____

HOME PHONE _____

WORK PHONE _____

☐ Check attached *(payable to Owens Technical College)*
☐ VISA
☐ MasterCard Number: _____
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Cardholder name: _____

Please mail to:
Owens Technical College • Continuing Education Division • PO Box 10,000 • Toledo, Ohio 43699-1947
or call 419-666-6163

OTTO
OHIO TECHNOLOGY TRANSFER ORGANIZATION

Since 1989, the Ohio Technology Transfer Organization (OTTO) has been working with the National Institute for Occupational Safety and Health (NIOSH) to transfer NIOSH-developed control technologies and practices to the workplace.

This workshop is designed to provide information and demonstrations on the best technologies for use in controlling asbestos dust in brake work. The content and materials have been developed by the Ohio State University OTTO office, the Owens Technical College OTTO office, and NIOSH.

The Ohio Technology Transfer Organization is a state-funded technology extension service with offices–and agents–in the state's two-year and technical college system. OTTO agents provide on-site technical assistance to companies in their communities. OTTO services are free, confidential, and involve no red tape.

DANGER asbestos

Learn how to recognize the hazards and how to control them. Find out more about the simple rules for safe brake work, including the five basics:

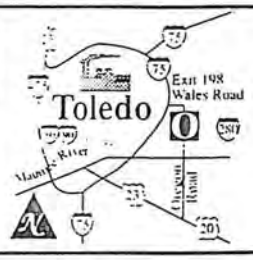
- Don't Blow It!
- Keep It Clean!
- Wet It Down!
- Seal It Tight!
- Check It Out!

Anyone working on brakes needs protection from asbestos!

The workshop will show you what to do and what not to do, and experts will explain in detail the hazards of asbestos exposure and effective methods of control. You'll learn how to use wet systems and enclosure systems properly and you'll have plenty of time for questions and discussion.

Protect yourself, your workers, your business, your environment–and your family. Attend this no-nonsense 2-hour workshop.

The Toledo Campus of Owens Technical College is just five minutes from downtown Toledo. After exiting I-75 at Wales Road (Exit 198) turn east on Wales to Oregon Road (1st traffic light). Turn right (south) on Oregon for one mile to the red flashing four-way stop sign. Turn left into the Industrial Techniologies (first building on the right) parking lot. The workshop will start in room 214 of the Industrial Technologies building.



BE SMART Know how to be safe

BE SAFE Keep asbestos out of the air

It's *easy* to be sure!

Are your methods *really* safe?

Find out how at the workshop on

BRAKE TECHNOLOGY AND asbestos

Owens Technical College • Wednesday, September 25, 1992 • 7-9:00 p.m

THE OHIO TECHNOLOGY
TRANSFER ORGANIZATION
THE OHIO STATE UNIVERSITY
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