



Case Study: The Asphalt Partnership Summary Report

A CPWR r2p Initiative

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Introduction

In the early 1990s a debate was raging about the health hazards of asphalt fumes and whether they would be classified as a human carcinogen. Amid this controversy an unlikely partnership was born. Representatives from government agencies, labor, and the asphalt industry, each of whom believed that they had the science on their side, decided to look beyond their differences and instead work together to reduce worker exposures to asphalt fumes in the asphalt paving industry. This new partnership, which also brought in equipment manufacturers, led to the development, testing and adoption of engineering controls for asphalt pavers. By 2007, virtually all highway class pavers in the U.S. were equipped with effective exhaust ventilation that protects workers from fumes. The partnership continued to evolve and led to several other successful collaborative efforts to improve worker safety and health.

This remarkable success story provides a model of how partnerships can play a powerful role in preventing worker injury and illness. It also offers important lessons on what makes an effective partnership; the relationship between research and practice; the benefits of taking a precautionary approach; and the role of champions and facilitators in creating and sustaining change.

In order to understand more clearly the lessons offered by this partnership model, CPWR - The Center for Construction Research and Training conducted an in-depth case study of the Asphalt Paving Partnership as part of an overall Research to Practice (r2p) Initiative.

Significance

Why study research to practice?

Construction remains one of the most dangerous industries in the U.S. with workers killed on the job every day¹. Yet promising safety and health solutions exist that would help to prevent these deaths and numerous nonfatal injuries and illnesses. CPWR wants to ensure that occupational health research is translated into effective and widely-used solutions in the construction industry and has started a multi-year, NIOSH-funded initiative to study and promote research to practice in construction worker health and safety.

Why study partnerships?

Partnerships have long been considered critical to research to practice efforts in public health, allowing “independent individuals and organizations to combine their human and material resources and accomplish objectives they are unable to bring about alone.”² While partnerships are frequently discussed in the public health literature³, little is known about health and safety partnerships in the construction industry that involve labor, management, government, and other key stakeholders.

CPWR has included “Partnerships for Prevention” as part of their r2p initiative in order to learn about what works in partnerships in the construction industry and the elements that contribute to successful outcomes. In addition to the Asphalt Partnership case study, CPWR is reviewing other examples of r2p partnerships in health and safety and is supporting the development and evaluation of two new collaborations. We will draw lessons from all of these activities and promote them as part of an effective partnership approach for future efforts in construction.

Why study the Asphalt Partnership?

For more than 15 years, the Asphalt Partnership has used a forward-looking, collaborative approach to develop and apply evidence-based solutions to occupational health and safety problems in the asphalt paving industry. It serves as an important example of:

- An effective multi-stakeholder partnership for prevention
- Successfully integrating scientific research and practice
- Achieving broad adoption of worker health and safety protections using a precautionary, voluntary approach

Methods

We conducted case study research involving 15 interviews with industry, labor, and government stakeholders who have been involved in the Asphalt Partnership. Our primary focus was on the initial Engineering Controls partnership and the success of the voluntary control agreement they crafted.

15 in-depth interviews with stakeholders from the Asphalt Partnership

Most interviews lasted 60-90 minutes. The interviews were audio-recorded and transcribed. Two researchers analyzed each transcript using 57 codes for themes related to partnership success using ATLAS.ti (Scientific Software), a qualitative data analysis program. We also reviewed background documents from the Asphalt Partnership, including award applications, trade articles, and research publications.

Findings: The Asphalt Partnership

What is the Asphalt Partnership?

The Asphalt Partnership is a multi-stakeholder partnership that aims to improve worker health and safety in the asphalt paving industry. It began in the mid-1990s with a major victory in the voluntary, universal adoption of engineering controls to control asphalt fumes on highway-class pavers⁴ and has continued on to several other initiatives to protect worker safety and health. Over its more than 15 year history, it has included partners from industry, labor, government, and academic researchers.

The National Asphalt Pavement Association (NAPA), which represents asphalt paving contractors and paver manufacturers, initiated the Engineering Controls partnership, along with individual contractors and all six U.S. manufacturers of heavy asphalt pavers. Labor groups representing operators and laborers were also involved: the International Union of Operating Engineers (IUOE), the Laborers' International Union of North America (LIUNA), and the Laborers' Health and Safety Fund of North America. The government agencies that took part in the partnership were The National Institute for Occupational Safety and Health (NIOSH), Occupational Safety and Health Administration (OSHA), and the Federal Highway Administration (FHWA).

Liquid asphalt producers were not a part of the Engineering Controls voluntary agreement, but were involved in providing technical expertise in the early stages of the partnership, and included the Asphalt Institute, the trade group that represents asphalt producers. Subsequent efforts of the partnership included additional partners, including academic researchers, the Association of Equipment Manufacturers (AEM), milling machine manufacturers, the American Association of State Highway and Transportation Officials (AASHTO), state departments of transportation (DOTs), and the American Road and Transportation Builders Association (ARTBA).

How did the Asphalt Partnership start?

- **Controversy about the health effects of asphalt fumes sparked the idea for a different approach.** In the early 1990s, at a time of heightened awareness about toxic hazards in occupational health, concerns about the effects of asphalt fumes, and in particular, their potential to cause cancer among asphalt paving workers, were gaining momentum. NIOSH was conducting research on asphalt fumes as OSHA was also exploring their inclusion in an update to permissible exposure limits in construction. Labor groups shared these concerns, and the Laborers' Health and Safety Fund issued a report detailing the evidence to date about the health effects of asphalt fumes⁵.

Organizations represented in the case study:

Industry

- National Asphalt Pavement Association (NAPA)
- Association of Equipment Manufacturers (AEM)

Labor

- International Union of Operating Engineers (IUOE)
- Laborers' International Union of North America (LIUNA)
- Laborers' Health and Safety Fund of North America

Government

- The National Institute for Occupational Safety and Health (NIOSH)
- Occupational Safety and Health Administration (OSHA)
- Federal Highway Administration (FHWA)

Other events came together to bring additional attention to asphalt fumes. Congress had recently passed legislation with a requirement to add crumb rubber from scrap tires to asphalt paving mix, and the FHWA was tasked with investigating the potential health effects. Increased scrutiny of asphalt was also coming from communities and activists concerned about the broader impact on public health and the physical environment.

The possible classification of asphalt fumes as an occupational carcinogen was a serious threat to the industry, and avoiding “another asbestos”⁶ was a high priority. In addition to adverse health consequences for workers, the carcinogen label carried potential implications for regulation, legal liability, and public perception. However, NAPA disagreed with conclusions drawn from existing research linking asphalt fumes to cancer and initially responded to government and labor’s concerns by contesting the science.

Even as industry was investing substantial sums of research money to counter government evidence, a breakthrough occurred within NAPA. Bob Thompson, a prominent paving contractor and then chairperson of NAPA, wondered if there was a way to sidestep the controversy altogether.

I said, ‘we’re crazy to fight this. Why don’t we just get away from exposing our people to these fumes, and then the issue goes away whether they’re bad or good.’

Thompson, who has been widely credited as being an important early champion of the proactive, collaborative approach, leveraged his relationships within the industry to convince a core group of contractors and manufacturers to investigate the possibility of reducing worker exposures. Their first look at the issue suggested that there were a variety of potentially viable controls. The manufacturers developed prototype control packages based on these ideas, and initial tests of the controls suggested that fairly simple ventilation systems could significantly reduce the level of fumes near workers.

*We’re going to be testing mice forever.
Why don’t we just get rid of the fume?*

- **An innovative, multi-stakeholder partnership was formed.** With promising preliminary tests of engineering controls, Thompson and the rest of NAPA began reaching out to other stakeholder groups. They knew that they needed the collaboration of key government agencies and of labor unions to move forward with developing, testing, and implementing the engineering controls. Making the case for collaboration, Thompson observed to Linda Rosenstock, then the director of NIOSH,

*This is going to be our mice against your mice. We’re going to be testing mice forever.
Why don’t we just get rid of the fume?*

Initially wary of partnering with industry around the controversial worker health issue, labor and government representatives did agree that taking action to reduce exposures would be a positive step, regardless of their previous differences with industry. On the industry side, there was also distrust of both labor and government among members of NAPA’s union and non-union contractors, and equipment manufacturers were more accustomed to competing with each other than cooperating. Leadership at NAPA embarked on efforts to establish trust and credibility among the

stakeholders, including the hiring of Don Elisburg, a veteran labor lawyer with years of experience at high levels of government, to facilitate relationships within the fledgling partnership. Its collaborative process not only paved the way for success with the engineering controls project, but also created the precedents, infrastructure, and momentum for proactively pursuing future health and safety improvements.

What has the Asphalt Partnership accomplished?

- **Universal adoption of effective engineering controls on highway-class pavers.** In 1997, all six manufacturers signed a Voluntary Agreement with OSHA, FHWA, NAPA, and labor groups, agreeing to equip all new highway class pavers with engineering controls to reduce worker exposure to asphalt fumes. In the lead up to this event, through an effort coordinated by the partnership, each paver manufacturer designed controls tailored to its own product, and NIOSH tested their effectiveness. With a working life of 5-10 years, all highway-class pavers in the United States included the fumes controls by the mid-2000s. This timeline stands in contrast to the traditional OSHA rulemaking procedure which can take many years to even initiate the process for establishing a new health standard, and then typically up to ten years more to complete the process, if at all^{7,8,9}.

This went lightning fast...it's almost unheard of how quickly that occurred.

This went lightning fast because the contractors first evaluated these basic configurations just to see if the concept would work; we never really got testing with NIOSH until 1994. But within three years, we'd signed this voluntary agreement to put all these engineering controls on all of the new paving machines. And specifications have been developed, guidelines have been developed by NIOSH. There were public hearings and comments. I mean, it's almost unheard of how quickly that occurred. – Mike Acott, NAPA

If we had started at that same time and tried to get a new permissible exposure limit for asphalt fume through OSHA we'd still be working on it, and yet we have added engineering controls to highway-class pavers that reduced emissions by around 80% in the breathing zone of workers. And then subsequently with the [warm] mix asphalt, it's probably even more so. And so we have achieved through partnership just on the fume side of it...reducing the exposure and potential risk to workers almost, probably, to the level that we would have achieved if we had had a standard. – Paul Schulte, NIOSH

Follow-up field testing conducted by the partnership indicated that the engineering controls were effective at keeping worker exposure to asphalt fumes below the levels recommended by the American Conference of Governmental Industrial Hygienists (ACGIH)¹⁰.

If we had started at the same time and tried to get a new permissible exposure limit for asphalt fume we'd still be working on it.

- **A model for collaboration and sustainability for research to practice in health and safety.** The partnership's experience with engineering controls created a foundation for future efforts in two main ways. First, it proved that a cooperative approach could work. The group's efforts garnered recognition including awards for partnership and innovation from the National Occupational Research Agenda and Harvard University's Kennedy School of Government.

Second, the partnership developed lasting infrastructure for future collaboration. This included the establishment of cooperative, trusting relationships between the diverse partners, shared norms and principles for working together, and a collective identity as an open, innovative, and forward-looking group actively seeking to protect the health and safety of workers. One partner reflected on the value of the effort regardless of asphalt fume's ultimate classification¹¹:

I think we all said, "Hey, down the road we still have a product that's better to work around, safer to work around regardless of government edict and so we did a good thing and we're sticking with it." – Jeff Richmond, manufacturer

Building on this infrastructure and the momentum of the engineering controls outcomes, the partnership spun off additional collaborations and projects:

Subsequent partnership efforts:

- *Warm-mix:* Development of a lower-temperature "warm-mix" asphalt that releases fewer asphalt fumes. This new form of asphalt also requires less energy to prepare, providing environmental and economic benefits.
- *Silica/Milling:* Testing and development of engineering controls to suppress silica dust on asphalt milling machines.
- *Work-zone safety:* Trainings and the development of information materials to improve roadway work-zone safety.
- *Dermal exposures:* Research to assess and characterize workers' dermal exposures to asphalt in the paving industry.

How did the Asphalt Partnership establish an effective collaboration?

While the multi-stakeholder collaboration presented important opportunities for improving worker health and safety, it also came with challenges, not the least of which, according to Don Elisburg, was getting “a diverse bunch of people to talk on the same page.” Asphalt partners alluded to many ingredients for success and have themselves distilled a list of partnership principles that include: 1) *protecting the health and safety of workers and the environment*, 2) *involvement of all key stakeholders*, 3) *openness, transparency, and trust*, 4) *practical research and technology*, and 5) *best practices implementation*¹². Here we discuss the most common themes that emerged from the interviews, which echo the partnership’s own principles.

- **Common vision, common goals, and compartmentalization.** Establishing a common, “win-win” vision that would benefit all partners and protect worker health was cited as particularly important for gaining buy-in from the diverse stakeholders.

You have to start with having a target, having a goal. I give Gary Fore credit for defining it initially, getting buy in from everybody. He didn't just say, "This is what we're going to do." He got good input. But then every meeting he started off reminding everybody what the goals were, keeping them focused. – Russ Hutchison, Association of Equipment Manufacturers (AEM)

A common vision also had to involve clear goals and concrete deliverables.

If all you want to do is convene a coffee klatch that will meet every three months forever, it'll be fun, but you really don't have anything to move forward. – Don Elisburg, facilitator

It also required partners to “agree to disagree” about certain issues. Identifying and compartmentalizing areas of tension outside of the partnership, such as contract negotiations between local unions and their employers, allowed the partners to focus on collective action in the areas where they shared a common interest.

The state of mind was [that] you could be proactive, you could be positive, you could be worker-protective and still have disagreements. – Paul Schulte, NIOSH

If all you want to do is convene a coffee klatch that will meet every three months forever, it'll be fun, but you really don't have anything to move forward.

Asphalt Partnership Principles

- 1) Protecting the health and safety of workers and the environment
- 2) Involvement of all key stakeholders
- 3) Openness, transparency, and trust
- 4) Practical research and technology
- 5) Best practices implementation

- **Key stakeholders.** Actively including all key stakeholders in an issue was another commonly mentioned factor for success and each partner and partner organization made critical contributions to the effort. Roles that all collaborators played included: promoting and creating buy-in for partnership activities within their respective constituencies, making themselves fully available to other partners when needed, and contributing some level of time and financial resources. Partners also had more specific roles and contributions:

Stakeholder Roles in the Asphalt Partnership

In the Engineering Controls Partnership, **NAPA** was often credited with providing leadership in initiating the group and in the administration and facilitation of the partnership. They actively invested in the functioning of the group, retaining Elisburg as the partnership's facilitator and contributing funding for research. NAPA's member contractors, engineers, and other professionals also provided practical and technical paving expertise.

Labor contributed technical and practical expertise on health and safety issues but also critical worker protection perspectives. In subsequent partnerships, Jim Melius of LIUNA (Laborers' International Union of North America) described engaging in candid discussions about industry initiatives with NAPA in which he cautioned against taking a more defensive stance. Melius has credited NAPA partners with "being willing to address those issues." Labor's guidance and participation has also lent credibility to the group's, and especially industry's, role in worker protection efforts. Additionally, in the Work-Zone Safety Partnership, LIUNA took the lead in convening stakeholders and organizing the work.

Manufacturers designed, developed, and tested controls for their machines, committed to implementation of the changes through the voluntary agreement, and also invested substantial resources in the research, development, and testing efforts.

Government partners provided a range of resources and skills. NIOSH contributed scientific research and evaluation expertise and helped shepherd the partnership's work through the agency's practice guidelines and hazard review processes. OSHA drafted the voluntary agreement, used their weight as a regulatory agency to bring partners together to sign it, and provided the critical legal cover against anti-trust claims that was necessary for all manufacturers to be involved. FHWA was most often credited with providing essential resources for the group's early work. They also convened partners for input on crumb rubber health effects research, which helped lay the foundation for collaboration on the engineering controls.

- **Inclusiveness and respect.** In addition to including all relevant stakeholders, efforts were made to ensure all were respected, valued, and had a voice.

[There was] a real willingness to have people bring to the table whatever expertise they had and then have that expertise be respected and used. – Linda Rosenstock, formerly of NIOSH

Respect was conveyed in different ways. One partner commented that one of the chair’s roles was to “[make] sure that all the principals [felt] like they were important, integral parts of making this whole process work.”

Taking all partners’ concerns and ideas seriously was another form of respect in the partnership:

Addressing each other’s issues – for instance, one of the partners may put an issue on the table that may mean literally nothing to me, but because that partner put that issue on the table, I don’t have a problem addressing it to the extent I can to keep the partner involved. And I think we’ve consistently done that. – Emmett Russell, IUOE

I believe, just like in any other type of healthy relationship, there’s that, “Hey, my partner has an idea. I want to listen to that. I want to see if there’s a way that we can create a win-win scenario here.” – Michael Mangum, NAPA

Of particular note, the influence of partners was, as Gary Fore put it, “never grounded on the basis of resource participation.” While the engineering controls and subsequent projects required significant amounts of resources, partners did not mention funding as a challenging issue for the collaboration. All partners additionally reported feeling fortunate that the necessary stakeholders also happened to be outstanding individuals.

I think it was really the group because you had to have everybody functioning to make anything happen. You had to have the right dynamics. – Don Elisburg, facilitator

You have to have individuals that are open to working with other partners in ways that they may not have even thought of in the past. – Bill Kojola, formerly of the Laborers’ Health and Safety Fund

Addressing each other’s issues...I think we’ve consistently done that.

- **“Healthy oxygen.” Positive group dynamics and processes facilitated the partnership’s effectiveness.** One of the defining features of the partnership was its high level of attention to relationship-building and group dynamics. As the initial convener, eager to demonstrate their earnest commitment to the collaboration and proactive approach, NAPA made the functioning of the partnership a priority. They made active and substantial investments to develop positive partnership dynamics, and partners ultimately attributed much of the group’s effectiveness to this effort.

If all that we do is focus on tasks and objectives, you might eventually get there, but you won't get there as fast and you won't get there as effectively....How they work together, how they listen to each other, how they collaborate. Is there a healthy oxygen in that room when people get together? – Michael Mangum, NAPA

[T]he important thing is that you've got to really work on what I call the chemistry of these relationships to make sure that there are sufficiently joint interests in making something work. – Don Elisburg, facilitator

Is there a healthy oxygen in that room when people get together?

Focus on relationships. While the group instituted administrative structures and process, such as formal meetings, agendas, and minutes, partners explained that relationships formed the backbone of the partnership and became a natural departure point from which to make decisions and work through conflict.

[Y]ou can have these formal systems and structures and processes and that's fine. And we have some of that. But I think that what's distinctive about this is that strong, strong relational component. – Michael Mangum, NAPA

Relationships were built in part by breaking bread over “really good crab dinners” as well as through frequent communication. This occurred during formal meetings and conference calls as well as phone calls and other less formal channels. Again, referring to the very conscious priority on developing trust and relationships, Gary Fore described the extra care put into reaching out to labor. While the entire partnership had regularly scheduled meetings three times a year with the occasional ad-hoc meeting, Fore and Elisburg met with the unions on a monthly basis during the beginning of the partnership.

“Openness, transparency, and trust.” This partnership principle was the basis on which relationships were built. Across the board, partners repeatedly emphasized the importance of openness, transparency, and trust. They also added that consistency, respect, and commitment were important reinforcing elements.

We committed to transparency... There was no such thing as “Well, we can't tell you that till we're done.”

[We] agreed to the fact that we would be open, that there would be no secrets, that we would share our results. We committed to transparency.... There was no such thing as, “Well, we can't tell you that till we're done.” – Byron Lord, FHWA

I think one of the reasons we were able to accomplish what we did was that we had great trust in the parties. I think we had good faith going in and knew from the outset that this wasn't just lip service about multisectoral collaboration.... – Linda Rosenstock, formerly of NIOSH

If one time we had violated that relationship, we might not ever get back on top of the relationship. So that was the principle. Openness and transparency, that's the rule. – Gary Fore, formerly of NAPA

- **“Tiptoeing through the tulips.” Facilitators, champions, and leaders were essential to establishing and maintaining the partnership.** Individuals who could bridge the gap between stakeholders who had not previously worked together or who were accustomed to dealing with each other on a more adversarial basis were critical. In the Engineering Controls partnership, Don Elisburg was the official facilitator.

Although Don was hired by us [NAPA] as a consultant, he was never going to do anything that would get NIOSH or the unions into trouble. He was seen as an honest broker of this partnership. And I don't think we would have got this done without Don Elisburg. – Mike Acott, NAPA

Elisburg was tasked with initiating and maintaining the overall relationship between labor, government, and industry, and establishing buy-in around a “win-win” proposition for all groups. Elisburg also acted as a convener and “translator,” bringing together the different groups and helping them to minimize conflict and misunderstandings.

What Don did in the early days we don't have to do so much of today. He was the guy who helped us tiptoe through the tulips, so to speak. Consider that the trust is not there when you walk in the room with a bunch of people you don't know and you have questions maybe as to whether they really share in the mission that you share....I didn't pick up the phone in those days and call a Jim Melius or an Emmett [representatives of the Laborers' and Operating Engineers unions]. I'd call Don and say, “Don, I'm not sure how this will be perceived. Can you help?” And he would get the answer to the question. And we would act accordingly and that kept us out of what I would call sensitive territory. – Gary Fore, formerly of NAPA

In addition to Elisburg, many other individuals across the partnership also served in leadership and facilitating roles. Gary Fore, NAPA's now-retired Vice President of Environment, Health, and Safety, took on some of the logistical aspects of group facilitation, including organizing meetings and conference calls. He was also often credited with keeping the group focused, cohesive, and adhering to its principles.

Partnership “champions.” As mentioned earlier, Bob Thompson served as an early champion of the collaboration and proactive approach. Using his own reputation and influence among his peers and colleagues to marshal support for the uncharted territory of partnering with labor and government, Thompson described the importance of credibility and determination in this role:

A champion puts their head down, just uses all their effort to make this thing work...You had to put your personal self on the line.

Another important role was the chairperson of the partnership, which was always a contractor member of NAPA. The chairperson acted as an ongoing “champion” for the partnership and its efforts, particularly among NAPA's contractors and manufacturers. According to respondents, it was

important that this person was well-respected by both contractors and manufacturers, and that they were able to communicate effectively with NAPA leadership. Bob Thompson was the first chairperson of the engineering controls partnership. He was succeeded by Chuck Van Deusen, and Tony Bodway for the silica/milling machine partnership.

NAPA as a facilitator/moderator. Respondents also referred to NAPA as a whole as a facilitator and moderator of the partnership:

NAPA has been the lead. Their openness and commitment and Gary Fore's openness and commitment matched. And I think that permeated itself throughout the partnership and everything that the partnership has actually taken on. – Emmett Russell, IUOE

NAPA being sort of the organizing body who represents both the manufacturers and the customer, their role was critical because they had to be the moderator and make sure that we stay away from antitrust issues and manufacturers bickering with each other. – Jeff Richmond, manufacturer

[NAPA's] role was critical because they had to be the moderator.

How does the Asphalt Partnership connect research and practice?

- **“Practical research and technology and best practices implementation.”** When developing engineering controls for pavers, partners agreed that they did not need to wait for conclusive evidence of health effects in order to take preventive action to protect worker health. As mentioned above, this precautionary approach was an innovative response to the threat of a serious occupational health hazard. However, science remained at the center of the partnership’s work and they incorporated high-quality research throughout. As they developed and implemented interventions to reduce worker exposure, they rigorously tested and evaluated their efforts to ensure effectiveness while continuing to support research on health hazards.

One of the principles going in was to do credible science. Not load the cannons and blow somebody away, but work with the various stakeholders to get some credible science on the table. – Gary Fore, formerly of NAPA

- **The partnership model drew on diverse strengths from both the practice and the research worlds to develop successful interventions and ensure widespread adoption.** With all relevant stakeholders at the table from the project’s start, the group has been able to integrate the strengths, resources expertise, and concerns of all partners as initiatives progress through development, testing, and adoption. This “practice to research” orientation of the partnership allowed it to overcome typical stumbling blocks involved in translating health and safety research into workable, real-world solutions. Bill Kojola, formerly of the Laborers’ Health and Safety Fund of North America, remarked,

You want to talk about r2p, you cannot have a better example. How do we take NIOSH's ability to do this research and link it to what you do with a field test?...[T]hen the manufacturers have already agreed that they're going to install this stuff on their equipment and away we go. All of the pieces were linked.

For example, as the partnership developed the engineering controls, NIOSH had expertise in the development and testing of control measures. The contractors, manufacturers and labor, on the other hand, had intimate knowledge of the paving process and equipment. Each partner was able to build upon the assets of the other and provide critical insights into creating an effective control that worked in the real world, an important challenge for research to practice efforts.

You want to talk about r2p, you cannot have a better example...All of the pieces were linked.

Conclusion

The Asphalt Partnership offers an important example of how partnerships with bold vision and commitment can achieve dramatic change for worker health and safety and create the collaborative infrastructure and momentum to sustain their efforts over time. By all partner accounts, the collaboration attained universal adoption of engineering controls to reduce worker exposure to asphalt fumes faster, with less acrimony, and possibly more effectively, than attempting to advance a regulatory standard. Furthermore, they did not stop with this initial success but continued the work on other efforts to protect worker health. Mike Acott said of the engineering controls in a recent talk, “That was great, but for us the gold standard was to reduce or eliminate fumes at the source completely. And so we continued our quest to improve workplace conditions.” This “quest” led the partnership to the warm-mix initiative which further decreases fumes exposure, as well as other worker health and safety projects.

...we continued our quest to improve workplace conditions.

How unique is the Asphalt Partnership model? How replicable is it? Certainly with the engineering controls project, a confluence of events and circumstances came together to facilitate success, and partners acknowledged that there was a certain amount of luck and timing involved. The imminent threat of the classification of asphalt fumes as a carcinogen and recent memories of construction’s experience with asbestos created a sense of urgency on the part of industry to focus attention on the worker health issue. Having a small, clearly defined universe of manufacturers of large pavers to work with was advantageous in coordinating universal adoption of the controls, and even the nature of asphalt paving fumes and overlap with broader environmental concerns played a role. The high visibility and strong odor of asphalt fumes during paving operations and during production brought additional attention and pressure from members of the public and the environmental movement to understand and address any potential hazards.

Yet the group also overcame challenges. We have already described the unlikely creation of a high-functioning partnership between individuals from labor, government and industry who not only lacked previous experience working together but also had come into active opposition or competition with each other in the past. Other challenges included decisions about the type of solutions to pursue, such as ruling out the use of personal protective equipment with labor and contractors strongly objecting to putting workers in “moonsuits.” Several concerns also emerged on the manufacturing side. The partnership found it needed to confront the issues of adapting controls to variations in machinery; perceptions of collusion and anti-trust activity among manufacturers suddenly collaborating on technological innovation; and neutralizing threats that any one manufacturer might develop competitive advantage over another with the engineering controls.

The partnership itself has been able to replicate the proactive approach to health and safety in spin-off efforts in such diverse areas as work-zone safety, silica, dermal exposures, and warm-mix. Once the collaborative infrastructure and momentum were in place, initiating and sustaining the effort no longer required the exact same meeting of circumstances.

Partners unequivocally believed that their model was transferrable to other areas of construction. By bringing together the right partners from labor, government, and industry, making the case for how a

precautionary approach can create win-win situations, and building strong relationships through trust, transparency, and openness, and with the help of skilled facilitators and champions, real and significant change through “practical research and best practices implementation” is possible.

Others can clearly employ these techniques, but they've got to be willing to really live it. ...People have to look deep inside the fabric of any group or organization and say, “Hey, is that who we are? Can we do that?” And if they can and can say that honestly, then this is a great roadmap. – Michael Mangum, NAPA

Others can clearly employ these techniques, but they've got to be willing to really live it.

It's very transferrable... I think when you're talking something like a safety related issue, there's no reason why a group like this can't be successful in a number of environments. It takes a group of members that are willing to put their commercial considerations aside and realize that, at the end of the day, if we control our own destiny and we're ahead of this thing and we're writing the standards rather than marching to somebody else's drum beat, then commercially we're miles ahead. – Jeff Richmond, manufacturer

I don't know that effective partnerships are unique, but I think effective partnerships are complex...I think they have to have an organization that has a very open mind to lead the partnership and make the partnership work...[that] all of the entities in the partnership have to feel comfortable that they have a voice and their voice can be heard, and that the partnership is doing something. – Emmett Russell, IUOE

Oh, I think it's very transferable. I think it's absolutely transferable...But again, it goes right back to leadership. You just can't do this without a clear vision and a clear leader. – Bob Thompson, formerly of NAPA

I think it's highly transferrable in the sense that people can appreciate a model that includes identifying areas of disagreement, compartmentalizing them to some extent, if you can deal with the underlying concern for the workforce...You could find a lot of situations where people from all stakeholder groups would resonate with that kind of approach because it's a sensible approach. – Paul Schulte, NIOSH

You could find a lot of situations where people from all stakeholder groups would resonate with that kind of approach because it's a sensible approach.

What Can We Learn From The Asphalt Partnership?

- **Identify a common mission for the partnership.** A common mission allows the different partners to identify and work towards “win-win” solutions. Part of establishing this common vision involves identifying outside areas of disagreement, and a commitment to compartmentalize those disagreements from the work of the partnership.
- **Identify concrete goals.** In addition to a common mission, the partnership needs to establish a clear pathway of how they will work towards that mission, with goals that are concrete and achievable.
- **Involve all key stakeholders.** Having critical stakeholders at the table helps to create buy-in for the effort from the beginning. It also allows the partnership to benefit from each partner’s unique resources and expertise. Including relevant stakeholders also means making efforts to ensure that all partners feel respected, valued, and have a voice.
- **“Champions” and other leaders can help overcome resistance and concerns.** If stakeholders are concerned about going in a new direction, strong champions of an effort can leverage relationships and create openings to try out a new approach.
- **Prioritize the quality of relationships within the partnership.** Positive group dynamics are vital to success, and partnerships can actively invest in the quality of the group’s relationships. These include establishing trust and transparency, encouraging inclusiveness, and bringing in trusted facilitators to bridge groups that do not already have strong, established relationships. These activities can be time and resource intensive, but establishing positive relationships early on is critical.
- **Use a partnership approach to facilitate the research to practice process.** Conducting joint research provides significant benefits, and a partnership allows stakeholders to overcome typical gaps in translating research to practice. Real world concerns and circumstances can be incorporated into solutions, and involving all key stakeholders increases the possibility for achieving widespread adoption.
- **Adopt a precautionary approach.** Traditional adversarial approaches that focus primarily on contesting the health effects research of occupational exposures can be costly and protracted. A precautionary approach that aims to remove or reduce the hazard before conclusive evidence on health effects is established can be more efficient, productive, and rewarding.
- **Partnerships can act as an impetus for subsequent worker health and safety efforts and partnerships.** Partnerships can help to establish new norms and group identities around worker health and safety among stakeholders. They also build the collaborative infrastructure and a platform for continuing the momentum to protect worker health and safety.

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PARTNERS

CURRENT TITLE

Industry

Bob Thompson	CEO of McCoig LLC, President of the Thompson Foundation; Past Chairman of NAPA
Don Elisburg	NAPA consultant
Michael Mangum	NAPA Program Director for the Asphalt Fumes Initiative; Past Chairman of NAPA
Jeff Richmond	President, Roadtec
Russ Hutchison	Retired, Association of Equipment Manufacturers (Director of Technical and Safety Services)
Gary Fore	Retired, NAPA (Vice President of Environment, Health, and Safety)
Mike Acott	President, NAPA
Chuck Van Deusen	Past Chairman of NCAT

Labor

Bill Kojola	Industrial Hygienist, AFL-CIO
Jim Melius	Administrator, New York State Laborers Health and Safety Trust Fund
Emmett Russell	IUOE, Director of Safety and Health

Government

Dorothy Dougherty	OSHA, Director of Standards and Guidance
Byron Lord	FHWA, Program Coordinator, Highways for LIFE
Bill Perry	OSHA, Deputy Director of Standards and Guidance
Linda Rosenstock	Dean, UCLA School of Public Health
Paul Schulte	NIOSH, Director, Education and Information Division

Endnotes

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