Volume 12, Issue 2 February 2005

THE CHARLOTTE SAWDUST

The Official Journal of
The Charlotte Woodworker's Association

www.charlottewoodworkers.org

Small Talk

Our regular meeting place has changed and not quite settled yet. This month we will meet at the ICEHOUSE Center in Davidson, NC The address is:

Icehouse Center
432 South Main Street
Davidson, NC 28036
704-892-7323
On the web http://www.icehousecenter.org

Next Month we are scheduled to meet at the Charlotte Art League. More information will be coming on that.

Sincerely.

Phil Ashley
Phillipjashley@aol.com
(704) 841-2001 x338 days
(704) 548-2851 evenings

February Program

Our President Bruce Bradford will speak about making Rocking Chairs.

Meeting Time

Meetings of the Charlotte Woodworker's Association are held the third Monday of each month, except for December. **Our regular meeting place has changed and not quite settled yet. This month we will meet at the ICEHOUSE Center in Davidson, NC The address is:**

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Following a social and refreshment time that starts at 5:30pm, our meetings start at 6:00pm. Get to the meeting early and get to know your fellow woodworking enthusiasts. Please refrain from placing food, drinks and trash on worktables and shelves around The Woodworking Shop.

$$$ Save Money at the Woodworking Shop $$$

As a member of the Charlotte Woodworkers Association you can save 10% off all your purchases from The Woodworking Shop, excluding wood and power tools. Thanks to our hosts at the Woodworking Shop for allowing us to have our monthly meetings and extending 10% off to CWA members.

Write an article for Sawdust (thanks for all the help from those that have)

Please consider writing an article for The Sawdust, this is your newsletter what do you want from it? What do you want to share with your fellow woodworkers? Everyone likes to share, share your successes, failures, mistakes, have fun with it and share with others at the same time! Contact Phil Ashley @ secretary@charlottewoodworkers.org or call (704) 841-2001 x 338 days or (704) 548-2851 evenings.

CWA Mentor Program

The following members have offered their help to anyone interested in learning skills or new techniques in their area of interest. Contact each person to arrange times to get together if interested.

Name	Area of Interest	Phone	Email
Wayne Cooper	***	704.409.1417	cooper@arconmfg.com
Bill Golden	Shopsmith & Accessories	704.525.9691	popstoyshop@juno.com
Dwight Hartsell	Woodturning	704.598.6029	woodwight@aol.com
Jeff Jacobs	any woodworking	704.309.1263	jacobj@meckco.com
Wayne Manahan	Sharpening	704.786.0768	wmanahan@vnet.net
Gil Milsaps	Windsor chairs	704.875.0758	gad32about@aol.com
Alvin Tench	any woodworking	704.824.7717	alvintench@netzero.com

*** Wayne Cooper has a fairly complete shop and would actually like an experienced woodworker to use it and teach him how to use it properly in exchange for use of the shop. If you are interested in helping Mr. Cooper please contact him directly to make appropriate arrangements.

Classified Section

$$ For Sale $$

Approximately 1000 board feet of 1 inch thick Oak – various widths from 6" to 10", the boards are about 12 feet long. Asking $1/bf with a 100 bf minimum, would like to sell all 1000 bf for $900. Contact Mike Patterson @ 1-704-435-5179.

8" Inca Tilt Table Saw ($295), Makita 9820-2 Electric Sharpener ($150) and a Makita 9045N ½ Sheet finish sander ($50) are available from George Fryling at 704-752-0121 or George@fryling.com.

Delta tennoning jig, excellent condition. $50. Contact Fred Miller, 704-375-0306, or email fred.miller@wachovia.com.

2.5HP 10-inch Radial Arm Saw on legs and a 10-inch Craftsman Table Saw on legs, both for sale for $400 in very good condition. Contact Chuck Foster, 704-596-4430, or email onememory2@aol.com.

Doris Avila needs someone to cut some small shapes for her out of ½" plywood. For more information email her draart@earthlink.net or call her 704-658-1026. She is willing to pay for these services. She's an artist and teacher, but not a woodworker.

The Keys To Effective Dust Collection

By John Iwanski

Reprinted from Wood & Wood Products, June 1999

Wood products companies are facing increasing pressure, not just from employees or the Occupational Safety and Health Administration, but from themselves to promote a healthy work environment. A decreased labor pool means employers more than ever want to keep their employees healthy and in top shape.

OSHA currently requires shops that produce wood dust to meet a dust exposure requirement of 15 milligrams per cubic meter of space. This limit was originally established in 1971 and was brought back in 1992 when a federal court ruled that the 5mg/cm limit OSHA implemented in 1989 was not reached under proper rulemaking practices.

However, even with all the concerns and changes in regulations, companies are looking for answers. Many shops are looking at new ways of minimizing wood dust emissions while attempting to maintain profitability.

With this in mind, *Wood & Wood Products* spoke with some experts in the dust collection industry to find out what the most common problem is that they see in the field every day. They also spoke about some unique situations that have required unusual solutions, as well as discussed what wood product manufacturers should look for before they purchase or upgrade a collection system.

Here are some of the things the dust collection industry experts had to say, covering everything from ductwork and collection units, to planning a system and purchasing the right collector for now and the future.

Plan Before You Buy

"When you design a dust collection system, the last thing considered is the dust collector itself," says Curt Corum, sales manager for Woodbridge, CT-based Air Handling Systems.

"A common problem I have is that people will come to me and say 'I've purchased a 5-hp dust collector and I need you to design the system.' Then, after I go in and figure out the requirements, I have to tell the customer that they need a 7 1/2-hp or 10-hp unit. They usually aren't real happy at that point."

Riccardo Azzoni, president of New Milford, CT-based Atlantic Machinery Corp. agrees, saying, "Dust collection systems should be purchased by taking into consideration the efficiency of units and the filtration capacity.

"Just putting a large motor on a dust system does not improve efficiency unless you have an adequate air exchange," adds Azzoni. "The unwillingness of the customer to spend money on the right dust collection system is the most common obstacle I see in the industry."

According to Robert Witter, owner of Syracuse, NY-based Oneida Air Systems Inc., many small shop owners simply are not prepared for what some companies throw at them in terms of dust collection technology.

"There's a lot of misconception about dust collection, especially on the small shop level," says Witter. "What we find quite often in small shops is makeshift-type collection equipment. That usually is self-defeating because the air that is supposed to be cleaned is going right through the filter bags and exacerbating the problem.

"Then, if they get a large quote from a company who can't really work with the smaller-scale problems that their shop incurs, they continue to look at 'stop-gap' methods that don't help themselves or their products. I've seen shops pushing 10mg/1 cubic meter through their filter bags. All you have then is blow through. You know it and the customer knows it."

Resolving Problems Before They Occur

What do experts recommend for shop owners? First and foremost, one must be aware of the shop's needs and be sure that the products purchased will help improve the air quality in the workshop. Industry experts also agree it is important to be sure that the company that is contracted by the

manufacturer can back up what it sells and be on call to help with any potential difficulties or pitfalls along the way.

“Eighty to ninety percent of the time, people buy a dust collector that isn’t going to do what they want it to,” says Corum. “We (dust collection suppliers) have to educate people to use the right product and engineer it properly. Companies need to do their homework to be sure that they have the proper collection and filter device that will provide the proper vacuum and filtration.”

Chuck Morrison, product manager for Thomasville, NC-based DISA, says that knowing the company and what it can deliver is key in the evolving world of industrial air filtration and dust collection.

“Is the customer working with a reputable manufacturer, contractor or representative?” says Morrison. “That is very important. Also, the design of a system is important, from the ducting drops through the fan design, as well as the collector design and removal plan.”

All these factors must be taken into account before the wood product manufacturer invests a large portion of capital into dust collection, says Morrison.

“Customers generally end up looking for the cheapest alternative rather than the best value for their investment,” continues Morrison. “That usually isn’t the best thing to do.”

Dust Collection as an Investment

“The most common problem I see in today’s market is how the customer perceives the investment of dust collection,” says Morrison. “Many see it basically as a ‘necessary evil’ when they should view it as a way to improve production.

“Improved collection means improved employee morale due to cleanliness. It also improves tooling life due to cleanliness and reduced wear on the tool as well as improved product quality output,” says Morrison. “These are important factors which are often overlooked.”

According to Witter, customers are slowly but surely beginning to recognize the value of an effective dust evacuation system.

“Customers are beginning to see that central dust collection works. Clients will say, ‘I can’t imagine that I ever operated before without this.’ In a lot of ways, it’s like a microwave oven. The quality of air improves so much, clients don’t know how their shops functioned before we put in a system.”

Planning for the Future

“What customers should look for is the future needs of their company,” says Rosemary Kraemer of Brampton, ONT-based Kraemer Tool & Mfg. Co. Ltd. “They need to see where their company will be in two or three years in terms of machinery that they will have online. Customers need to figure out the CFM that will be required down the road and take that into account.

“Shop and company owners have to take into account expansion or they will find themselves in the same situation they were in before they added their system,” Kraemer continues. “Customers don’t consider add-ons when they plan and that can really hurt the viability of the system that’s been installed.”

Another important factor to consider is the transport velocity that occurs in the ductwork. According to Faith Salchert of Donaldson/Torit Products, that velocity can be reduced if customers don’t take into consideration the possibility of future expansion.

“It’s really important to have adequate transfer and transport velocity,” says Salchert. “If they add a new piece of equipment, there needs to be a little bit of design consideration built into the system for what they are doing. You can’t simply pipe it into the main ductwork and expect the system to operate at an optimum level.

“The collection system will be able to move a certain amount of dust, clean the air and recirculate it into the shop,” continues Salchert. “But when companies just start throwing machines onto the system and don’t allow for upgrades in other areas, they will be in for trouble over the long run.”

Designing a System That Fits the Shop’s Needs and Budget

Cost-effectiveness, especially with non-production items like dust collectors, is often difficult to measure. So how does a manufacturer know what type of system is best for his shop?

Most experts agree that knowing how much dust one’s shop produces is the most important factor involved in dust collection system design. If manufacturers do not know how much wood dust is being

produced, it is a safe bet that they have no idea what type of collector or removal system is needed either.

“A lot of shops, when you ask them about how much actual dust they will put out in an hour or an eight hour workday, they don’t have any idea,” says Neil Rosenquest, president of Addison, IL-based Dustvent. “So how can a shop owner make a educated decision about collection when it’s not clear how much dust is being created in the first place?

“Some shops might only need a 55-gallon drum and a chip collector for what they generate,” continues Rosenquest. “But when you start getting into machines like moulders, you can fill a 55-gallon barrel in 20 minutes. You have to know what you’re putting out in order to develop a system that will not only improve the health of your workers, but also provide safety in your shop.”

Andrew Wichlinski of Alsip, IL-based Scientific Dust Collectors agrees that getting a customer to see the benefits of a good dust collection system is not always easy, especially when costing and budgeting is a big concern.

“The problem that is the same throughout the industry is convincing the small- to medium-sized shop that dust collection is important. That is so difficult sometimes,” says Wichlinski. “Dust collection is important, but it doesn’t show up directly in the bottom line in terms of increased profits or improved productivity.

“So what the industry is faced with is educating manufacturers that dust collection can be cost-effective and still benefit the shop. Keeping a clean shop and employees healthy is important, but when a smaller shop sees a $15,000 bill for dust collection, they don’t exactly jump to sign on,” continues Wichlinski. “What companies need to recognize is that they can improve their product quality as well as increase the life of their tooling by investing in a good collection system. We (dust collection suppliers) can put in place a collector and filtration system that will pay for itself in terms of improved finish quality and reduced employee leave and clean-up times. Not to mention the fact that it complies with safety ordinances and reduces the possibility of fires or explosions within the shop.”

Safeguarding Employees

In woodworking operations, potential safety hazards exist not only with the machinery and tools of the workplace, but also in the air around it. Air that is not properly filtered can be a fire waiting to happen, and anything from the spark of a tool grinder to the accidental ash of an employee who can not wait to go outside for a smoke can ignite a baghouse explosion.

“It’s potentially explosive,” says Wichlinski. “Wood dust can catch fire at any time, and if you have it laying on the ground or, even worse, floating in the air, you have the potential for a flash fire situation.”

According to Corum, there are a lot of different safeguards that can be put in place to prevent safety problems. But manufacturers should always be sure to use the product in the context of the proper application.

“Some collection units still have 20-30 micron tolerance. If you are letting that kind of air circulate in the shop, there is the potential for a hazardous situation,” says Corum. “Adding other devices such as a ceiling-contained dust collection unit can help you maintain your limits. But if you are blowing that much dust out into the shop (20-30 microns), the ceiling unit isn’t going to be able to handle that effectively. That isn’t what it’s designed for. All the pieces of the puzzle have to fit together to eliminate the problem and circulate clean air back inside the workplace.”

Be Aware of Local Laws

With all of the legal questions and changes that have surrounded permissible exposure limits for wood dust exposure (see sidebar on pg. 193), it is becoming increasingly difficult for wood product manufacturers to know just what they need to do to have their shop in compliance.

Otto Siemen, president of Huntington Park, CA-based Murphy-Rodgers says that though OSHA’s present federal wood dust standard is broad, many states and cities are enforcing laws that are even more stringent and that is what manufacturers must look out for.

“Satisfying local municipal authorities and local standards has become a greater problem than (the regulation) of OSHA,” Siemen says.

Those sentiments were echoed by Witter, who noted that he is sometimes as confused about the regulations as some of his customers are. “You try to lower the dust to an acceptable level,” says Witter. “But what is that? There are so many studies out there, that a lot of times the customer isn’t sure what acceptable levels should be.”

Peter Levitt of Bogota, NJ-based Sternvent, says he thinks that the ambiguity of the exposure limits has been a hindrance to the industry. As a result, more manufacturers in the wood products industry are faced with decisions to purchase a product that may or may not help their company improve their air quality and also be compliant with the most recent standards and requirements.

“When it comes to safety and compliance in dust collection, a lot of companies don’t know where to go,” says Levitt. “A lot of times, the fire codes in certain states or municipalities are more stringent than OSHA’s regulations. So when a system is installed, the fabricator has to make sure that all of the requirements are met or the client will have a system online that doesn’t take care of their needs and won’t be up to code for the local fire department.”

Filtration Developments Aid Manufacturers

Another important advancement that was mentioned by almost all of the experts W&WP interviewed is the improvement in the actual filter media and the changes it is bringing to the industry. As filter media becomes more advanced, more and more collection units are able to operate more efficiently, an idea that is never lost on the customer.

“The key to minimizing dust in the shop is filtering it,” says Witter. “There are a lot of filtering systems out there, and a lot of those still use filter bags. The bags do fine, as long as you use an improved media in the proper amount for the amount of dust that will move through that bag.”

The improvement in fine filter media has had a large impact on how dust collection companies design filtration systems and the recommendations they make to their potential customers. The increased popularity of fine filter products has also allowed companies to significantly decrease the amount of fine dust in the air, potentially the most dangerous because of its “invisibility”. “If companies have a lot of fine dust being generated, sanding with fine grit paper that takes off just a little bit of wood, then they have to do two things,” says Kraemer. “They must account for more filter ratio, first and foremost. They need to have a wonderful filter ratio. If the customer doesn’t have many small particles, but more large chips, that’s fine. They can have a lower ratio of filter media. But fine dust needs more filter area to remove it, or the dust will simply recirculate back into the shop.

“They also need to be sure that the media they use is checked regularly. If the media is not checked, they may get to a point where they simply have the dust blowing through back into the work area,” Kraemer continues. “That obviously is something that no one wants to have happen.”

Fine dust is a problem that Salchert says is becoming increasingly concerning for manufacturers, even for smaller-sized woodworking operations.

“One of the unique trends that the industry is seeing is the move toward cartridge filtering and getting away from bag filtration,” Salchert says. “I think that’s more because companies want to get away from fine dust. They don’t want dust all over their expensive machinery because it can affect overall production. The cartridge system also allows for easier maintenance than that of a bag, so they have that as a positive for looking at that type of filtration system as well.”

Salchert also says that as cartridge media becomes more prevalent, companies will begin to see the benefits that the system offers. “Companies are always looking for ways to improve production and quality. Cartridge systems overall provide easier maintenance and really reduce the amount of dust that will circulate in the workshop.”

Disposing the Collected Dust

One of the most overlooked problems by woodworking companies is the problem of waste removal. Once the wood waste and dust is collected, just where is it supposed to go?

“The storage, handling and disposal of collected wood dust, chips, etc., in a simple and economical manner is a major problem for most woodworking facilities,” says Levitt. “The collection units vary from a 55-gallon drum or a series of plastic bags for small or non-production shops to a dust collector with a large storage hopper of 100 to 300 cubic feet on a truck stand.”

However, larger stands are not necessarily better, says Levitt. The way the waste is disposed of is nearly as important as how it is collected.

“Two disadvantages of a large hopper are the tendency of material to bridge inside, slowing or stopping flow, and also the cloud of dust that’s created,” says Levitt. “Many times, a better alternative is a continuous discharge from the collector through a motorized rotary airlock into a dock cart or dumpster that includes a plastic liner which will contain the dust when it’s dumped into a larger container.”

According to Salchert, a common problem results when customers do not keep collection areas orderly. The units then begin to back-up, but customers don’t understand why they have problems with overflow.

“Another area that manufacturers really need to look out for is their dust storage area,” says Salchert. “That area must be maintained, or dust can fill it up into the collection system and collector, which impacts the performance of the unit. Many times people will have a problem and not even bother to check and see if the collector is full. If it is backing up into the collector or the ductwork, the manufacturer may have a potentially serious problem.”

Two Dust Collection Case Studies

Many companies hesitate on the issue of dust collection not because of cost or regulation ambiguity, but as a result of the “unsolvable” dust collection problem.

“One thing that you can say about dust collection is that nearly every situation is unique,” says Corum. “The industry is approached with unique problems on a daily basis. Ducting is always an interesting aspect of collection because it has to allow for proper flow and velocity but not be too cumbersome.”

Corum notes that on a recent Air Handling Systems project that involved ductwork for the television show *New Yankee Workshop*, the biggest challenge involved the noise of the collector.

“We had all the sound problems that go with a television production, as well as the aesthetics involved with viewing. We ended up modifying some of the hood fittings and adjusting the ductwork so that the projects could be completed without the noise of a typical shop,” Corum says.

“We had to change the standard fitting on a chop saw and cut a tapered funnel tight underneath the machine. And by changing from an 8-inch to a 4-inch bottom, it keeps the air moving around it. You can’t put a hood on that, especially with television showing what work is being done, so it enabled the machine to work with a conventional dust collection system and still allowed viewers to see the action.”

Levitt says that one of the largest problems Sternvent has encountered was with a toy manufacturer who began producing pencils.

“The company used ‘shop-vacs’ to pick up the waste, but after a half hour, it was obvious they weren’t going to work,” says Levitt. “They didn’t provide enough airflow nor enough storage capacity. The majority of wood waste, which was shavings, filled a 55-gallon drum in less than 15 minutes.

“A baghouse collector wouldn’t work either because of the bulk and light density of the shavings,” continues Levitt. “By using a high-efficiency cyclone with a top-mounted fan, the customer was assured that no shavings would bridge inside the cyclone because of the high velocity and down flow air pattern. Then a rotary air lock was attached to the cyclone with a surge receiver for a continuous discharge of shavings into an open top container.”

Suppliers Advice: Be Prepared

Perhaps more than any other item though, experts advised woodworkers to simply be prepared to handle the results of their labor.

“With the increased use of high- powered equipment, especially in smaller shops, collection is really important,” says Witter. “Ten, twenty years ago, those shops used hand tools.”

According to Wichlinski, collection manufacturers also work with companies and are prepared for almost anything.

“We have to configure each system differently,” says Wichlinski. “There are so many ways to dispose of dust, it’s important to be flexible and prepared, yet still provide an effective and safe way of eliminating waste. That’s why clients are coming to us in the first place.”

Determining How Much Dust Is Safe

Common sense tells us that limiting the amount of wood dust we breathe is a good idea. Indeed, the limitation of any outside particles from the human lung is generally accepted as good practice, whether in woodworking or medicine.

For most of the last three decades, putting a limit on wood dust emissions in the workplace has been hotly debated and contested. With the lack of substantiated studies and the difficulties associated with the cause and effect principles that accompany that type of research, the questions and debates have been ongoing.

In 1971, the Occupational Safety and Health Administration established a permissible exposure limit for wood dust. Classified as a “nuisance dust,” wood dust had a limit of 15 milligrams per cubic meter of space.

In 1988, OSHA proposed that the standards be changed after reports that some wood dust may be carcinogenic. The new PEL limits were proposed at 5mg/cm for softwood and 1mg/cm for hardwoods. Industry leaders argued that the 1mg PEL would not be economically achievable and could not be substantiated by scientific evidence.

The following year, OSHA decided to implement a single PEL for all wood dust, established at 5mg/cm. This limit was based primarily on respiratory effects of wood dust exposure and was intended to be a benchmark for the industry. Certain hardwoods, such as western red cedar, had a PEL of 2.5mg/cm.

In 1992, several unions and industries challenged OSHA’s PEL update rule and an appellate court overturned OSHA’s air contaminants standard. The court said that OSHA had not followed correct and proper procedures in regards to rulemaking. As a result, the PEL standard reverted back to the old limit of 15 mg/cm.

Since then, numerous studies and inquiries have been conducted, with mixed results and conclusions. In 1994, the International Agency for Research on Cancer classified both hardwood and softwood dusts as human nasal carcinogens, with particular concern given to some species of hardwoods.

In 1996, the American Conference of Governmental Industrial Hygienists classified hardwood, but not softwood dust, as a human carcinogen. Two years later, the conference proposed a significant reduction in threshold limit values for wood dust, highlighting the respiratory effects that the inhalation of wood dust had on workers.

Many other studies of note have and are being conducted now. One significant study is being conducted at Tulane University and is sponsored by the Inter-Industry Wood Dust Coordinating Committee. The study, which will cost more than $2 million and is being funded by contributing members of the committee, plans to obtain scientific information as to what exposure levels, wood types and dust size fractions are important and harmful. By finding hard evidence, this study and others like it will be forwarded to OSHA as it looks at establishing new federal wood dust limits.

The study, which will be completed in the fall of 2004, will collect standardized annual measures of respiratory health. The measures will be collected by plant personnel certified to National Institute for Occupational Safety and Health standards to collect data. Tulane industrial hygienists will also conduct wood dust exposure tests on site at participating plants. The study will monitor 5,000 to 6,000 workers in 12 wood and wood products facilities.

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Show your CWA membership card at any of the listed places and receive benefits (except for Woodcraft and Harbor Freight USA, which are not able to provide sponsorship in the form of discounts).

2005 CWA Officers

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Next Meeting:
March, 21 2005
At the Ice House in Davidson