

VAC-U-MAX

To Protect Both US Workers and Their Companies' Profits, Industrial Clean Up Hazards Demand a Closer Look

VAC-U-MAX, an industrial vacuum expert, teams up with players in a range of industries to battle flammable, explosive, respiratory, ergonomic, and noise dangers, which are not only OSHA-regulated but also more insidious than many companies realize.

US businesses spend an estimated \$170 billion a year on costs associated with work injuries and illnesses - expenditures which come straight out of company profits in the form of increased absenteeism, workers' compensation claims, and retraining costs as well as decreased productivity, and morale. In fact, more than one-third of workers who returned to their jobs after a common occupational injury had to decrease their work pace and workload due to their disabilities, according to a 1998 study by the Connecticut Upper-Extremity Surveillance Project. "In today's competitive business environment, the black-and-blue of workplace injuries can be the difference between operating in the black and running in the red," said OSHA Administrator John L. Henshaw. "If safety pays, safety and health pay more. The development of comprehensive safety and health management systems can save millions of dollars, lives, and lost work hours."

In the battle to save lives, prevent injury and illness, and protect both US workers and their companies' profits, there are a number of industrial hazards to be overcome ranging from caustic, flammable, and explosive dangers to respiratory, ergonomic, and even noise concerns.

While the dangers of handling materials such as fuel, alcohol, solvent, or ordinance may be obvious, less obvious are the dangers of cleaning up many industrial products in liquid or powder form. For example, many carbon-based products such as toner or coal can be highly explosive, as can some pharmaceutical powders and even common food products such



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as sugar, grain, or cornstarch in certain conditions. When airborne in powder or particulate form, these materials and others can have dangerous explosive potential. In fact, fires or explosions may inadvertently be set off by a number of common causes such as the ignition spark in typical electric shop vacuums

starting up, the electrical spark caused by a vacuumed metal object such as a nut or bolt striking the inside of a non-stainless steel vacuum tank, as well as by the static electricity generated by air and material moving through ungrounded vacuum hose.

“Static electric shock to our workers while vacuuming excess powder coating was a concern,” said Sam Miller, Vice President of Miller Welding and Iron Works, a custom job shop fabricator based in Washington, Illinois. “We couldn’t adequately sweep the fine powder residue from the floor, lights, booth walls, and components, and there were potential flammability issues with the powder and the electric shop vacuums we were using. With the shop vacuums, our productivity suffered too since we not only had to vacuum but also clean by hand using wet rags to prepare booths for the next powder coating job.”

Miller turned to VAC-U-MAX of Belleville, New Jersey, a leader in industrial vacuum cleaning and pneumatic conveying systems since 1954. To eliminate any shock, fire, or explosion hazard associated with electric or engine driven units, VAC-U-MAX - which offers the industry’s only written static control guarantee - provided Venturi compressed air-powered vacuums with anti-sparking vacuum inlets and grounding lugs. Optional stainless steel anti-sparking construction of the cover, suction inlet, and all internal contact parts, excluding the filter, can now minimize the possibility of sparking resulting from dynamic contact between the suction inlet and particles drawn into it. Static conductivity from end to end, including a static conductive hose with internal ground wire and grounded end cuffs, further prevents static build up. Together these measures safeguard the cleanup of excess powder from fires or explosions related to static discharge or accidental electrical ignition.

Static-conductive filters, rated 99.9% efficient at one micron, further reduce sparking danger, while virtually eliminating any fine particle discharge from the vacuum’s exhaust back into the work area. This helps to create healthful, productive breathing conditions in the workplace.

When necessary, VAC-U-MAX can provide a second HEPA filter rated 99.97% on particle size to 0.3 micron. This can be useful in combating breathing

hazards such as silicosis - a lung disease caused by continued inhalation of siliceous minerals - that pose a threat in the glass, brick, cement, asphalt, ceramic, and metal fabrication industries where sand is used as a component or for blasting, as well as in tunneling operations. OSHA has established permissible exposure limits for the maximum amount of crystalline silica which workers may be exposed to during an 8-hour work shift, and admonishes, “Remember: if it’s silica, it’s not just dust.”

“The air operated vacuums were designed for powder applications like ours,” said Miller. “They eliminated both our static electricity problem and the spark concern we had with our previous electric shop vacuums. Not only that, but they’re also 30 per cent faster than the old shop vac equipment, cover more area, and pick up finer material. Smaller particles are trapped in the filter, which is safer for our staff.”

For clean up of truly explosive materials such as gunpowder, rocket propellant, sodium azide, aluminum powder, and others which can explode if collected in dry form, VAC-U-MAX offers a Submerged Recovery Vacuum Cleaner designed specifically to pick up explosive powders safely. The explosive or hazardous material is submerged under fluid to render it inert. The VAC-U-MAX design includes not only a high liquid level safety shut-off, but also a low liquid safety shut-off to prevent vacuum operation if insufficient liquid is in the drum.

While handling potentially explosive powder or dust can be a serious challenge, the non-explosive kind can also pose a challenge if it detracts from air quality or working conditions in production facilities. Forward thinking managers realize that it’s prudent to minimize worker contact not only with dust and powder, but also with sharp or jagged fragments that can injure or simply be an ergonomic burden to remove.

At Majestic Marble and Glass, a residential and commercial solid surface and granite fabricator in Youngsville, NC, Division Manager Jeff Coombs proactively sought to improve both air quality and workfloor ergonomics for his production staff. Previously, air quality was unsatisfactory as various sanders, routers, and miter saws produced a large volume of fine, heavy dust during production. Shop vacuums

attached to the workstations were cumbersome, tended to get in the way, and had to be emptied and cleaned several times each day. This was inconvenient, and cut into production time as well.

“On high use days, the dust would look like a fog on the shop floor,” says Coombs. “We wanted a high quality work environment, day in and day out, no matter what our volume. Not only that, but we knew the system had to be ergonomic and easy to use, or our staff just wouldn’t use it the way they should.”

Coombs turned to VAC-U-MAX, whose experience with fine powder coatings and heavy concrete dust met his needs. A VAC-U-MAX engineer twice visited his production floor to help custom engineer a central vacuum system to his needs. Drop-down hoses now hang conveniently over each station with quick connects that allow dust to be pulled directly off equipment at its source. An enlarged filter housing and extra filters with a non-stick surface ensure constant dust filtration with self-cleaning ability.

“With the source capture dust removal, there’s no visual dust anymore and air quality is vastly improved,” says Coombs. “Not only are we well within OSHA’s mandated air quality standard, but we’re also more productive and producing a better product. Since the dust is immediately removed from the sanders, saws, and routers, we’re getting about 20 percent more life out of our sandpaper and equipment. One man with a forklift can now dump the central hopper once every few days, allowing staff to stay productive at their stations without having to dump and clean the shop vacs several times a day the way we used to. In material, equipment, and labor, we’re saving up to \$20,000 per year.”

A commuter railroad in the Northeast faced a safety and ergonomic challenge in the grinding and milling of train wheels back into shape, after braking-caused thermal cracking. At a New York facility, metal chips shed from a 40-year old “wheel true” machine were traditionally blown by compressed air into a pit underneath the machine.

“Workers had to enter the pit to shovel the metal chips into buckets, which were then hauled out,” said David Kennedy, VAC-U-MAX Director of Sales. “The work was very labor intensive in a narrow crawl



In a planned refurbishing move, the railroad teamed up with the wheel true manufacturer and VAC-U-MAX to replace the antiquated blower system with a central vacuum system and vacuum-sealed, self-dumper hopper. Instead of the chips being blown through a piping network, the chips are now vacuumed, using a rotary lobe positive displacement pump designed for heavy metals.

space where it’s difficult even to kneel. Due to space constraints, the machinists also had to stand directly above a noisy blower on a grating above the pit. Moreover, the wheel true manufacturer no longer recommended blowing metal chips into the pit, since the chips often ended up lodging in gears, slides, tracks, or bearings and caused maintenance problems.”

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“Vacuum pressure at the cutting head draws off smoke and carbide dust,” says Kennedy. “Since the chips are actually being removed from the topside surfaces of the machine rather than merely being pushed around and into inappropriate locations, clean up is

much more efficient. By vacuuming up the stray chips, the pit is cleaned in a fraction of the time it formerly took and the noise is significantly less. This allows operators to better judge the machine's operation by the sound of the cutting head on the wheel."

The railroad is now working with VAC-U-MAX on an enhanced chip guard that will contain all stray chips, along with a vacuum seal and flexible brush heads. When this occurs, safety and productivity will be further enhanced.

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VAC-U-MAX systems are sold worldwide. Its industrial vacuum cleaners range from small air-and electric-powered drum-style units to large electric and diesel units. Centralized units can support fixed piping networks for general plant housekeeping or spill recovery. Options include continuous pulse filter cleaning, single or double HEPA filtration for hazardous materials, as well as a large variety of filter media. VAC-U-MAX provides material handling choices for collected materials and offers electrical components for all area classifications, and stainless steel construction as required by application.

For more information about VAC-U-MAX industrial vacuum cleaning solutions, write to them at 37 Rutgers Street, Belleville, NJ 07109; call 888-241-6992 ; e-mail info@VAC-U-MAX.com; or visit their web site www.VAC-U-MAX.com.

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