

PRESSURE INCREASES TO IMPLEMENT SAFE ALTERNATIVES TO COMPRESSED AIR

Growing awareness of the dangers and potential liabilities of compressed air has industries and institutions exploring new options

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Compressed air is so commonly used in commercial, industrial, and institutional settings that it is often incorrectly assumed to be safe, or less potentially dangerous than it actually is. In fact there are numerous hazards associated with the use of compressed air, and accidents and injuries involving compressed air cost US business millions of dollars each year. These costs are both direct and indirect, involving medical emergencies, equipment damage, production wastage, production downtime, as well as rising insurance costs and increased regulatory burdens.

Compressed air poses three distinct inherent risks: from air pressure, airborne particulate matter, and noise. These risks are increased exponentially when compressed air technology is used in an unsafe or negligent manner, and also when the equipment associated with compressed air systems is not maintained in optimal condition. Thousands of accidents occur in US workplaces each year because employees are improperly trained or insufficiently aware of the potential dangers of compressed air, and thousands more are the result of improperly installed or maintained systems and worn or damaged system components.

Beyond these immediate risks, compressed air systems have proven to be costly to install, operate, and maintain at a level that is fully compliant with changing safety regulations. Furthermore, in many applications the existence of high-pressure



Compressed air systems can be hazardous and create potential liabilities for employers.

compressed air for pneumatic operations may increase employer liabilities and substantially impact the cost of insurance.

In recent years, evolving workplace safety regulations and increased awareness of the risks and costs associated with traditional compressed air technologies have created a rapidly expanding market for a new generation of low-pressure blower systems for use where compressed air would pose an unacceptable level of risk either to equipment or personnel. These systems are typically designed to limit exposure to pressurized air streams and airborne particulates, and operate at noise levels well within regulatory guidelines. An unexpected benefit of these alternative systems is that they are also generally less expensive to operate and maintain.

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HIDDEN DANGERS OF COMPRESSED AIR



Regulations and safety guidelines have tightened and compliance is not optional.

HIGH PRESSURE EQUALS HIGH RISK

The optimal operating pressure for compressed air systems in industrial and manufacturing applications is typically between 80 and 120 psi, although some systems specify even higher pressures. These pressures can cause severe injuries if the compressed air is directed at personnel, even accidentally and for a short time. As such, compressed air systems are NEVER suitable for blowing dust or debris off

of clothes or bare skin. Unfortunately easy access to compressed air lines in factories and warehouses means that these dangers are often ignored, even where company procedures prohibit the use of compressed air. Cleaning of machinery with compressed air creates blowback which may contain wood or metal chips and other production-related debris.

The potential for even more serious injury exists wherever compressed air may enter the body through an orifice (eyes, nose, mouth) or an open cut or wound. Each year in the US, severe injuries and even deaths occur when workers are unaware of or underestimate these risks. In addition to the possibility of particulate matter, oils, or dirt entering the bloodstream, even relatively clean highly pressurized compressed air can cause a range of serious and potentially fatal injuries.

Federal regulations require that nozzles for compressed air hoses include a pressure relief feature that reduces air pressure to 30 psi when the aperture is completely blocked, however even this specification still exceeds safe levels for aiming at personnel or delicate materials. To safely blow production debris off personnel, the installation of an OSHA-compliant, low-

COMPRESSED AIR HAZARDS

The dangers associated with the use of compressed air systems in commercial, industrial, educational, and institutional facilities is well-documented by medical researchers and regulatory authorities such as OSHA and the Council of Europe.

- Air discharge pressures are unsafe for contact with the skin and can cause severe injury
- Air discharge contains multiple contaminants including oil, water, dust, debris
- Blowback from air discharge may contain production debris such as wood or metal chips
- Air compressors are a significant contributor to hazardous noise levels

Growing awareness of these hazards has led to increasing regulatory oversight worldwide. The use of compressed air for cleaning plant equipment or personnel is strictly prohibited in parts of Canada and some European jurisdictions.

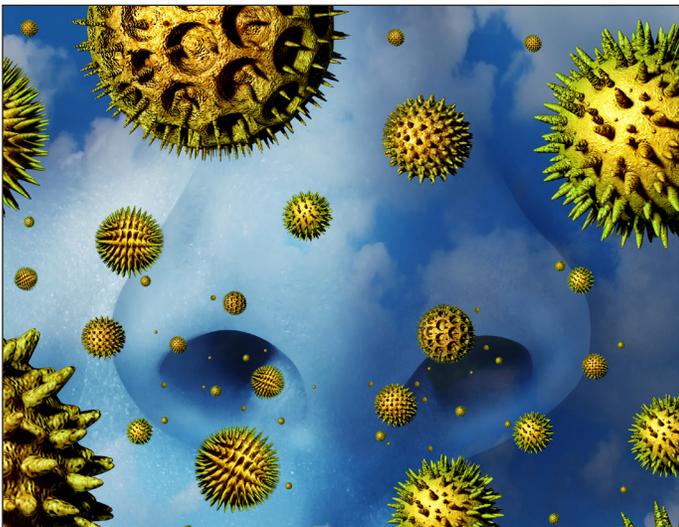


HIDDEN DANGERS OF COMPRESSED AIR

pressure system separate from the production compressed air system is essential. Federal regulations require that such systems include a chip guard to protect operators from potentially hazardous blowback.

A MATTER OF AIRBORNE PARTICULATES

Compressed air systems do not deliver clean air. The airflow produced by these systems, which include a compressor or compressors, hoses, clamps, fittings, and nozzles, contains trace amounts of oil, water, dust, and other microscopic particulates, many of which cannot be eliminated even with the use of filtering equipment. Over time the levels of these contaminating substances will only increase. In many instances, the system will also recycle additional particulate matter generated by the process or processes occurring within a given facility.



Microscopic contaminants and particulates pose significant risks to exposed personnel.

These particulates pose dangers for both plant personnel and equipment. If compressed air is used to clean off machinery, dirt and debris may be inadvertently blown into the equipment;

in some cases this can have serious effects on performance. The dangers are even more pronounced when compressed air is directed, for whatever reason, at operators or other personnel. The high pressure of compressed air can force even microscopic debris and particulates into the eyes, nose, mouth, other bodily orifices, and open cuts and wounds, resulting in infections and permanent injuries. Thousands of such cases are documented each year in the US alone, driving up insurance costs. Medical researchers have documented hundreds of horrific injuries from compressed-air related workplace accidents.

Installation of a standalone, low-pressure personnel blow-off system that complies

HIDDEN COSTS OF COMPRESSED AIR

Compressed air systems are common in industrial facilities but the true costs and potential liabilities associated with these systems are typically underestimated or not fully understood by management.

- Compressed air systems are energy-intensive and expensive to operate
- Accidents, injuries, insurance liabilities
- Safety training, enforcement, regulatory compliance
- Equipment damage, product wastage, air leakage, production downtime

Compressed air is more expensive than typical utilities such as water, electricity, and natural gas. Greater regulatory oversight and rising energy unit prices will only increase these costs and liabilities over time.

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HIDDEN DANGERS OF COMPRESSED AIR

with federal safety regulations can ensure a clean stream of safely pressurized air, free of significant particulate matter and suitable for on-site cleanup of both machines and operators.

FEARS ABOUT EARS

Air compressors and compressed air systems are known to be significant contributors to high levels of workplace noise, which is recognized as a hazard and regulated by OSHA, as well as state and local authorities. Even small compressors generate potentially harmful levels of noise and require that operators and other potentially exposed personnel use ear protection. Large industrial multi-unit compressor banks for plant-wide pneumatics operate at dangerously high decibel levels at all times. Although in such situations the

main compressors may be some distance away from production workers, the local discharge of pressurized air from these systems is still a serious noise hazard requiring protective measures.

In studies of industrial environments involving extensive use of compressed air for manufacturing and assembly, noise levels exceeding 120 decibels are common, with noise levels from hand tools of 95-110 decibels routinely recorded at the operator's ear. Although protective measures can be effective in ameliorating this risk, safety compliance requires constant monitoring and enforcement which itself can become a significant expenditure.

High levels of noise are a particular concern for schools, colleges, art museums, and other

A BREATH OF FRESH AIR

The Jet-Kleen series of high-performance, personnel blow-off systems

Specialized Safety Products developed its popular Jet-Kleen series of high-performance personnel blow-off systems to provide cost-effective safety solutions to a wide range of industries and institutions, responding to the growing demand for a safe and effective alternative to compressed air. Jet-Kleen units have been installed in industrial facilities, factories, warehouses, chemical plants, paper mills, schools, colleges, museums, workshops, and studios all over the world where safety is paramount.

These systems use an exclusive blower-driven technology to deliver a high volume of particulate-free air at safe pressure levels that are well within OSHA and CE standards. Operating at a safe and efficient 1.9-3.0 psi, all models in the Jet-Kleen series can be used to clean personnel, product, and equipment. The output is much cleaner than that of compressed air systems and Jet-Kleen units are much quieter as well, running at a maximum of 78 db.

- Safer and more efficient than compressed air
- Clean air output at 1.9 – 3.0 psi
- Cost-effective blower-driven system
- Quiet operation at no more than 78 db
- Rugged, heavy-duty construction with chip guard
- Range of models and options available

The Jet-Kleen series includes the original Jet-Kleen and the recently introduced Jet-Kleen Limited. Both are offered in portable and wall-mount models with a variety of options and attachments available. Contact Specialized Safety Products for sales or technical assistance.



HIDDEN DANGERS OF COMPRESSED AIR

institutions that may be using compressed air in shop, woodworking, and metalworking environments. With no real need for the high-pressure discharge from traditional compressors, the potential liabilities of compressed air systems may greatly outweigh any benefits. Awareness of noise hazard liabilities within these institutional markets has driven the development of alternative products that place greater emphasis on safety and regulatory compliance.



Compressed air systems may emit hazardous levels of noise.

DECOMPRESS FOR SAFETY

The real hazards and the alarming scope of potential liabilities associated with compressed

air systems have only recently become fully apparent through a combination of scientific research, technological developments, and the accumulation of medical data from a growing database of case studies. This awareness has in turn spurred extensive new regulatory guidance, enforcement, and intervention. The evolving regulatory picture has resulted in rising costs for business owners in the form of expanded training requirements, greater compliance burdens, and increased insurance premiums.

This uncertain environment has created a demand for market alternatives such as low-pressure, low-noise systems that deliver clean air and adhere to or exceed OSHA and CE standards. These systems may be particularly attractive to educational and institutional markets where personal safety is paramount. But even large-scale industrial operations committed to pneumatics can improve safety, ensure regulatory compliance, limit liabilities, and realize savings by deploying these safer alternatives for personnel and equipment clean-up.

