Should compressed air be used for cleaning or drying purposes?

A good question:
Using compressed air to clean objects, machinery, debris from bench tops, conveyors or clothes is extremely dangerous. Injuries can be caused by the air jet and by particles made airborne. However, this practice still occurs in most workplaces because of the easy availability of compressed air and old habits.

What are the hazards of using compressed air?

First, compressed air is extremely forceful. Depending on its pressure, compressed air can dislodge particles. These particles are a danger since they can enter a worker's eyes or damage skin. The potential damage depends on the size, weight, shape, composition, and speed of the particles. The pressure and sound of compressed air can also cause hearing damage.

Second, compressed air itself is also a serious hazard. Compressed air can enter the blood stream through a break in the skin or through a body opening. An air bubble in the blood stream, known as an embolism, is a dangerous medical condition in which a blood vessel is blocked, in this case, by an air bubble. An embolism of an artery can cause coma, paralysis or death depending on its size, duration and location. While air embolisms are usually associated with incorrect diving procedures, they can be caused by compressed air due to high pressures. While the chances of this occurring are small, the consequences of even a small quantity of air or other gas in the blood can quickly be fatal.

Thirdly, compressed air unless specially treated and monitored should not come in contact with certain products and is NOT breathable and therefore good ventilation is required, if operators have to work close by.

Finally, considering 39% of the Australian workforce is exposed to airborne hazards, the dust, vapours and other ‘foreign’ particles are harmful to the human lungs, this foreign matter can get lodged deep in these organs, fester and cause disabling diseases and in some cases death.

What is the cost of energy using compressed air for cleaning or drying purposes?

Compressed air (if best practices are applied) costs between **6 to 7 kW/Nm3/min,** and some cases as high as 22 kW/M3/min. Whereas compressed air using a low pressure blower cost between **1 to 2 kW/M3/min.**

What should be used instead of compressed air for cleaning or drying purposes?

Wearing the correct personal protective equipment (PPE) using a brush, vacuum cleaner (stationary or mobile) or very low pressure air (blower, air knives or air nozzles purposely designed for the application) should be used instead.

If compressed air must be used for cleaning and drying, how can this be done safely?

Firstly compressed air is not an effective medium to use for drying. The minimum air pressure that is still effective should be used. A "quiet" nozzle (i.e. one with low noise emission) should be selected. The nozzle pressure must remain below 500 kPa g (72 psi g) and personal protective equipment (PPE) must be worn to protect the worker's body (especially the eyes and lungs) against particles and dust under pressure. Air guns should also have local exhaust ventilation or facilities to control the generation of airborne particulates, gases, remembering that compressed air unless specially treated and monitored is NOT breathable. When compressed air cleaning is unavoidable, hazards can be reduced by making adjustments to the air gun such as:

- Chip guards that can deflect flying dust or debris,
- Extension tubes that provide the worker a safer working distance, or
- Injection exhausts and particle collection bags.

So please take the above into consideration, if you want to use compressed air for ‘blowing’, ‘drying’ or ‘cleaning’