

thought and it is flimsily made and tacked on to the machine as cheaply as possible. Such guards may even aggravate noise from a machine. This is one reason why manufacturer-built guards are recommended when possible over the "home made" kind. However, for noise reduction, many manufacturer-built guards are no better than "home made" guards.

Noise travels primarily by conduction and vibration through air. It can be attenuated by barriers which effectively stop or restrict further air activity either by absorption or by reflection and confinement of the sound waves. Since guards are usually positioned at either the point of operation or power transmission (whence noise originates), they can be designed as a barrier for noise as well as a barrier against personal injury.

A guard can be designed to be either absorbent or reflective of sound waves. A common way to absorb sound is to either line or cover the surrounding frame with a soft cellular material which soaks up the sound with dead-air spaces. Sometimes a thin layer of lead is sandwiched between two layers of such soft material to further reduce sound transmission. However, if oil is used in the process, this could create a serious fire hazard if the area has a heat buildup, for some of these soft materials tend to soak up oil. It

has also been found that if the guard is made of heavier metal stock (16 gage or better), it provides a dense, vibrationless surface when it is properly mounted. Proper mounting is essential for the success of either method, because both methods (absorptive and reflective barriers) require that the guard have an identical configuration with the surface on which it is attached. Some sort of gasket material should be used around the edges and any other place that metal-to-metal contact can occur, and the whole guard secured with shakeproof fittings. In effect, this unitizes the guard with the machine and contains the sound within, thus reducing the conducted sound. More details are in Chapter 40, "Noise and Hearing Conservation."

Summary

In summary, a complete guarding program is essential for any company. It prevents accidents, whether to people or machines, and thus facilitates production goals. It can be achieved only by studying and understanding the relationships between people and the machines they operate. Machines can produce only if they are used correctly—and they are used correctly only when all guards and safeguards are in place.

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