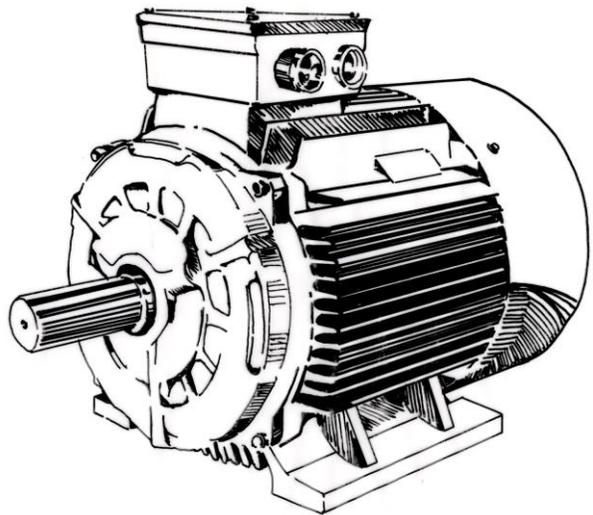
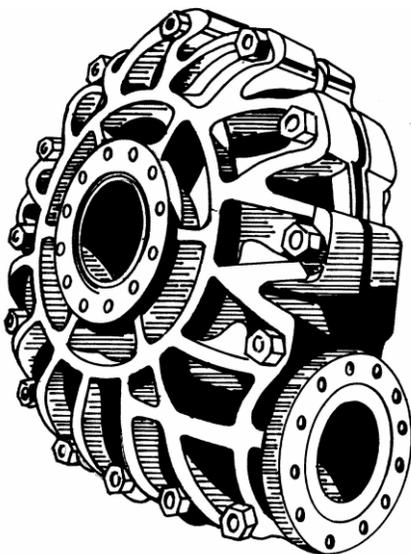
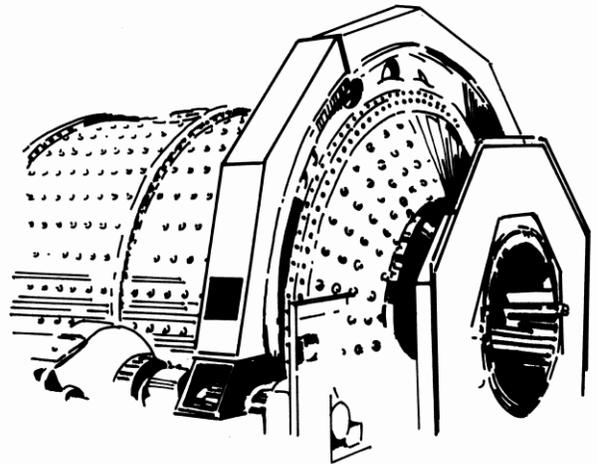
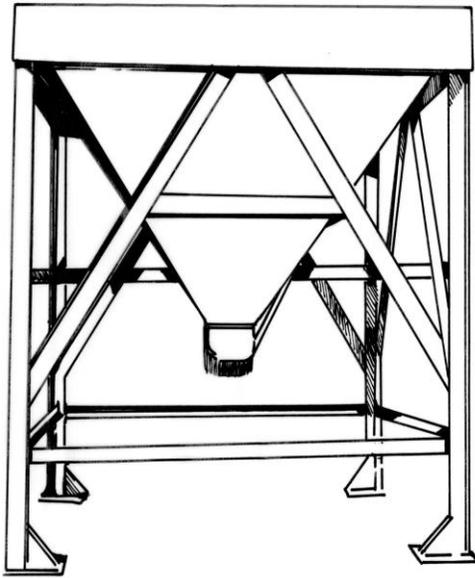


Noise Control Resource Guide –
Mills and Preparation Plants



U. S. Department of Labor
Mine Safety and Health Administration
(May 2012 revision)



**U.S. Department of Labor
Mine Safety and Health Administration**

List of Contributors (May 2012 Revision)

The following people contributed to the writing and production of the series of Noise Control Resource Guides:

Jerry W. Antel (Retired) - Technical Support – PTAD
Anthony S. Argirakis - Technical Support – PTAD
Gene E. Autio – MNMS&H – Health Division
Link R. Bowers - Technical Support – PTAD
Doris Cash – MNMS&H – Health Division
Calvin L. Cumerlato (Deceased) – Technical Support – PTAD
James L. Custer - Technical Support – Arlington
George Durkt Jr. - Technical Support – PTAD
John P. Homer- Technical Support - PTAD
Jennifer Honor – Office of the Solicitor
Michael Horbatko – CMS&H – District 9
Carol J. Jones – MNMS&H – Health Division
Paul T. Kinevy (Retired) - Technical Support – PTAD
William Knepp - CMS&H - District 3
Dennis Lowmaster - CMS&H - District 2
Carla Marcum - CMS&H - District 7
Leonard C. Marraccini (Retired) - Technical Support – PTAD
William McKinney - National Mine Health & Safety Academy
Gregory Meikle – CMS&H – Health Division
Carlos Mosley - CMS&H - District 3
Jason R. Novakovich - Technical Support - PTAD
Melinda Pon – CMS&H – Health Division
Bryan Sargent - CMS&H - District 8
John L. Schmeichel (Deceased) - Technical Support - PTAD
John P. Seiler – Technical Support - PTAD
Donald Starr - National Mine Health & Safety Academy
Wayne W. Woodruff (Retired) - Technical Support - PTAD
David R. Zuchelli - Technical Support – PTAD

CONTENTS

Preface.....	1
Disclaimer.....	1
Introduction.....	2
Noise Exposure Reduction.....	2
Dose from Multiple Noise Sources.....	3
Acoustical Materials.....	5
Flammability Guidelines.....	6
Installation Methods.....	6
Compliance Assistance.....	7
Mills and Preparation Plant Noise Controls.....	7
Centrifugal Dewaterers.....	11
Chutes.....	13
Compressors/Compressed Air.....	15
Crushers.....	18
Hoppers.....	21
Mills.....	23
Motors.....	25
Pumps.....	27
Screens - Classifying.....	29

APPENDICES

A. Partial listing of equipment manufacturers.....	32
B. Buyer's guide for noise control products.....	38
C. Partial listing of aftermarket cab manufacturers, and suppliers of stud-welding systems.....	51
D. Literature references.....	54

NOISE CONTROL RESOURCE GUIDE - MILLS AND PREPARATION PLANTS

PREFACE

The Mine Safety and Health Administration's (MSHA) Noise Control Resource Guide series is a compendium of resource information and guidance for reducing miners' noise exposures at coal and metal and nonmetal surface mines, underground mines, and mills and preparation plants. The Noise Control Resource Guides represent the Agency's continuing efforts to assist mine operators in lowering noise exposure, preventing miner hearing loss and achieving compliance with the Occupational Noise Exposure Standard (30 CFR Part 62).

Within this guide, you will find information that will help you:

- ❖ Identify noise sources in mills and preparation plants.
- ❖ Determine the availability of engineering noise controls from original equipment manufacturers (OEMs) for new equipment.
- ❖ Identify sources of retrofit noise controls from the OEMs and after-market suppliers of noise controls, and in some cases, provides information on engineering controls that can be designed, fabricated, and installed at the mine site.
- ❖ Identify contacts for machinery suppliers, and suppliers of sound and vibration controls and materials.

Technical experts and practitioners in the field of noise in the mining industry, as well as manufacturers of noise control equipment, provided information contained in this noise control resource guide. The material found in this guide should be considered a resource and not be construed to be a mandatory requirement. This guide should be used in conjunction with MSHA Program Information Bulletin (PIB) P11-45 "Technologically Achievable, Administratively Achievable and Promising Noise Controls (30 CFR Part 62)".

Due to the variability of the mining environment, it would be difficult to compile a document that would present controls that are feasible in each and every situation. The individual noise controls or series of controls found herein can reduce the exposure of most miners however, they must be designed, tailored, and implemented according to the specific situation. Questions regarding technical applicability and feasibility of the controls to a specific mining situation should be referred to the local MSHA office.

DISCLAIMER

These guides are a compendium of resource information and guidance for reducing a miner's overexposure to noise. However, it is not an "all encompassing" answer to every problem dealing with overexposure to noise. There are three things the reader should keep in mind:

1. Every type of equipment used in mining operations is not included in these guides. Only the more common equipment types are discussed.

2. With regard to manufacturers of mining equipment and distributors of control products, the industry is a very dynamic one. Companies change names, merge go out of business, relocate, etc. Thus, some of the information contained in the appendices may not be the most current. It is suggested that the reader may want to explore the Internet, or some of the monthly periodical magazines for current manufacturer/distributor information.
3. Reference to manufacturers is made to facilitate understanding and does not constitute an endorsement by the Mine Safety and Health Administration.

INTRODUCTION

MSHA promulgated Health Standards for Occupational Noise Exposure for the metal, nonmetal, and coal mining industry (30 CFR Part 62) in an effort to reduce the number of miners who will experience a material impairment of hearing. Part 62 establishes the full shift Permissible Exposure Level (PEL) at a Time Weighted Average over eight hours (TWA_8) of 90 dBA (100% Dose) and establishes an Action Level (AL) at a TWA_8 of 85 dBA (50% Dose). The operator is required to enroll affected miners in a Hearing Conservation Program if the AL is met or exceeded. If the PEL is exceeded, the mine operator is required to use all feasible engineering and/or administrative controls to reduce miner's exposure to the PEL.

The Noise Control Resource Guides deal with noise controls that are available on types of mining equipment typically used in different mining environments. The first guide covers surface mining; the second, underground mining; and the third, mills and preparation plants.

These guides will reference the type of mining equipment and noise controls that are available from the manufacturer of the equipment or as a retrofit for the equipment. The guides do not address generic administrative controls that are universally accepted as being effective, i.e. rotation of workers, time limitations, distance, etc. However, if specific administrative controls have been shown to provide significant noise reduction, these administrative controls will be discussed with the equipment or the process. The guides also contain appendices that list equipment manufacturers, noise control products, aftermarket manufacturers, reference sources, and contact information; however, these lists are not all inclusive.

NOISE EXPOSURE REDUCTION

In general, the amount of noise reduction achievable by, and the technologically achievability of a given noise control or a group of noise controls is widely variable and must be considered on a case-by-case basis. The amount of noise reduction that can be obtained from an individual noise control or suite of controls is dependent on a large number of factors:

- ❖ Type and model of machine
- ❖ Number and types of controls implemented
- ❖ Physical environment in which the machine is used
- ❖ Acoustical environment in which the machine is used
- ❖ Type of work the machine is performing
- ❖ Presence of other noise sources in the environment

- ❖ The degree to which the machine is noise-controlled prior to the installation of additional retrofit noise controls
- ❖ Quality of materials that are selected and used
- ❖ Quality of the installation of the controls
- ❖ Quality of the maintenance program for the machine
- ❖ Maintenance of noise controls
- ❖ Use of engineering controls in combination with administrative controls
- ❖ Experience of operator in using the machine

For these reasons, each of the machine and noise controls shown in this guide do not have specified noise reductions. Such figures are only obtainable after a complete acoustical investigation is conducted on each individual machine. Each noise control case study has a set of conditions that are unique to it.

Since the noise standards treat engineering controls equally with administrative controls, one may use either engineering or administrative controls or a combination of both to reduce miner's exposures. Each noise control guide is a valuable source of information for mine operators to use when deciding what type of mitigative action is best suited for the conditions encountered at their operation. In addition to the applicability of the control, the operator will need to consider the specific materials used when installing an engineering control. It is important to remember that the effectiveness of any engineering control used to reduce noise exposures is dependent on the appropriately selected, correctly installed and properly maintained acoustical material. As with most everything used in the mining industry, if an effective maintenance program is not put in place, the noise control will not last. Sometimes noise controls are expensive. It is in the operator's best interest to maintain the controls so as to reap the benefits of their investment.

DOSE FROM MULTIPLE NOISE SOURCES

Special considerations should be afforded to multiple noise sources, a situation common in the mining industry. Multiple noise sources present unique challenges in their measurement and control. The effectiveness of noise controls on multiple noise sources needs to be systematically evaluated in light of their contribution to a miner's exposure. To further illustrate this, consider the following:

When it is determined that there are multiple noise sources that contribute to a miner's noise exposure, and that these sources expose the miner to high levels of noise in a serial fashion, general noise control practices would direct you to lower the sound level of the highest noise source. However, noise exposure (dose) is a function of the sound level AND the amount of time the miner is exposed to the noise. Therefore, in planning which noise source(s) to treat, it is important to look at the sound level and the exposure time.

Table 1 illustrates the roles of sound level and exposure time. A particular miner's exposure is comprised of four levels and intervals: S1, a source of 90 dBA for 4 hours; S2, a source of 95 dBA for 2 hours; S3, a source of 100 dBA for 1 hour; and S4, a source of 88 dBA for 1 hour.

Table 1. Example Calculations Involving Multiple Sound Sources				
Source	Sound Level (dBA)	Measured Exposure Time (Hr.)	Allowable Exposure Time (Hr.)	Contribution to PEL Dose (%)
S1	90	4	8	50
S2	95	2	4	50
S3	100	1	2	50
S4	88	1	-	0
S3 mod	97	1	3.05	33
S1 mod	87	4	-	0
S2 mod	92	2	6.1	33

The miner's exposure [S1 + S2 + S3 + S4], computed in terms of percent dose compared to the permissible exposure level (PEL), with a 90 dBA threshold for 8 hours, is 150% [50 + 50 + 50 + 0].

By treating only the highest sound level source (S3) by application of an engineering noise control and reducing it from 100 dBA to 97 dBA (S3 mod), the miner's exposure [S1 + S2 + S3 mod + S4] would be 133% [50 + 50 + 33 + 0].

However, if the source to which the miner is exposed for most of the time (S1) is modified to obtain a 3 dBA reduction from 90 to 87 dBA [S1 mod], the impact is to reduce the miner's exposure [S1 mod + S2 + S3 + S4] to 100% [0 + 50 + 50 + 0]. Actually, a noise control yielding only a 1 dBA reduction applied to (S1) would achieve the same result.

If sources (S1) and (S2) are treated by 3 dBA each and reductions from 90 dBA to 87 dBA and from 95 dBA to 92 dBA obtained, the miner's resultant exposure [S1 mod + S2 mod + S3 + S4] would be 83% [0 + 33 + 50 + 0].

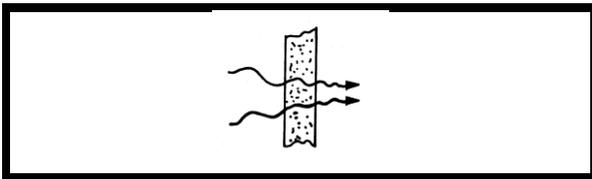
It is very important when conducting noise control work to examine the makeup of the miner's full shift noise exposure. The exposure may not be based solely on the highest sound level or the longest exposure time. It is the total noise dose, not just the individual sound levels or exposure times.

ACOUSTICAL MATERIALS

Acoustical materials can reduce noise either by absorbing or blocking sound waves, or damping vibrations. These materials are generally referred to as absorption, barrier, composite, and damping materials, and they can substantially increase the effectiveness of other acoustical devices. Selection of appropriate acoustical materials must be made based on a firm noise control engineering basis and commensurate to the task, properly installed, used, and maintained.

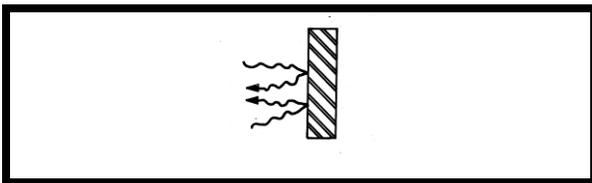
Acoustical devices include, but are not limited to, mufflers, silencers and enclosures. Absorption, barrier, composite, and damping/isolation materials are defined as follows:

Absorption



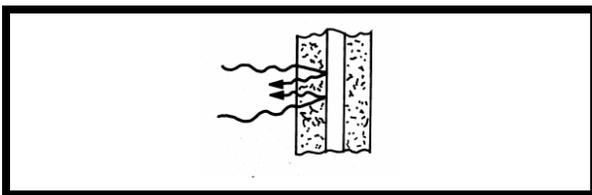
A material designed to absorb sound waves. It is not intended to be used for blocking sound waves. Some examples of absorption materials are foam and fiberglass. It may be used inside a cab or enclosure to prevent the reverberation of sound waves.

Barrier



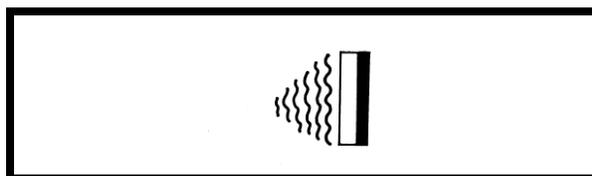
A material designed to block sound waves. It does not absorb sound waves. A typical use of barrier materials would be on the firewall of a bulldozer to block low frequency engine noise. Some examples of sound barriers are mass-loaded vinyl curtains, lead, plywood, glass, steel, and concrete.

Composite



A material designed to both absorb and block sound. It may be used to provide additional barrier qualities to an enclosure or operator cab as well as absorption of radiating sound waves. Some examples are combinations of foam, vinyl, fiberglass, and lead.

Damping/Isolation



Materials designed to damp, remove the ring from vibrating surfaces, and decouple source from structure.

FLAMMABILITY GUIDELINES

Although current MSHA regulations do not restrict the use of acoustical materials due to their flammability characteristics, MSHA has established a voluntary guideline regarding the flame spread index of acoustical materials. These indices were established based upon the results of ASTM E-162 – Radiant Panel Tests. Basically, a flame spread index of 25 or less is recommended for acoustical materials installed on equipment used in underground mines and a flame spread index of 50 or less for acoustical materials installed on equipment used at surface operations. Prior to the selection, installation and use of acoustical materials, operators should be aware of their flammability properties.

INSTALLATION METHODS

Acoustical materials may be installed in the following ways:

1. Adhesives – The use of an industrial adhesive requires a thorough cleaning of the surface area. The adhesive should then be applied according to the manufacturer's specifications. While the use of adhesives is economical and effective for installing the materials, the material cannot be removed intact and a potential hazard may exist from toxic fumes if subjected to intense heat. Also special solvents, that may have special conditions for use to avoid potential toxicity problems, may be needed to remove the adhesives.
2. Stud Welding – This method involves the use of a stud welder to attach a threaded, copper-coated stud to a metal surface such as a cab wall. The stud welder consists of a capacitance discharge unit and a hand-held triggering device, which holds the stud in place for welding. Upon release of the charge, an arc is struck between the tip of the stud and the metal surface, heating a small area. Simultaneously, the stud is plunged into the molten metal and the weld is completed. For a good quality weld the metal paint must be removed from the metal. The acoustical material is placed over the stud and secured with a rubber-cover button. This cover button not only holds the material in place, but offers a physical protection from the metal stud. The stud-welding method requires little surface preparation and allows for the removal and reinstallation of the materials for maintenance or repairs.
3. Bolts and Straps – Material may be held in place utilizing metal straps, which are secured by bolts and nuts at each end. This type of installation allows for easy removal and replacement of the acoustical material without damage. A perforated metal covering may be used in place of the straps to secure and protect the acoustical material.
4. Stick-on Studs – This method involves the use of threaded studs pre-welded to a metal disc having a self-adhesive backing. Surface preparation involves a thorough cleaning to remove oil, grease, or other contaminants. These studs may be attached to all types of surfaces. The materials are then pushed over the studs and held in place with a rubber-cover button. In some situations the weight of the acoustical materials may have an effect on the load bearing characteristics of the stick-on studs. Care should be taken.

COMPLIANCE ASSISTANCE

MSHA has produced several documents to aid the mining industry in complying with Part 62. These include:

- ❖ Hearing Protector Factor List
- ❖ Compliance Guide to MSHA's Occupational Noise Exposure Standard – IG 33
- ❖ A Guide to Conducting Noise Sampling – IG 32
- ❖ Audiometric Testing Reference Guide for MSHA's Occupational Noise Exposure Standard – IG 57
- ❖ Program Policy Letter No. P04-IV-I and P04-V-1 Noise Enforcement Policy
- ❖ Program Information Bulletin (PIB) No. P11-45 “Technologically Achievable, Administratively Achievable and Promising Noise Controls” (30 CFR Part 62)

MSHA will work with mine operators, miners, labor unions, industry associations, noise partnerships, mining equipment and noise control manufacturers, noise engineering professionals, and the National Institute for Occupational Safety and Health (NIOSH) in updating this document to reflect new solutions and experiences in controlling occupational noise exposures in the mining industry.

These compliance assistance documents are all available at MSHA's web site at www.msha.gov.

MILLS AND PREPARATION PLANT NOISE CONTROLS

This Noise Control Resource guide was developed to assist mine operators in controlling noise in Mills and Preparation Plants. It was prepared as an adjunct to MSHA's implementation of the final rule for Occupational Noise Exposure, 30 CFR Part 62.

The first requirement in controlling noise is to identify the highest noise exposure tasks and the sources that contribute to the miner's noise exposure. Facility clean-up, equipment inspection, equipment maintenance, and plant circuit operators are typically the tasks where employees receive the highest noise dose. The most common noise generating sources are screens, chutes, crushers, motors, pumps, centrifugal dryers, and air compressors.

A general discussion on various engineering and administrative controls will precede a presentation of more equipment-specific controls. A listing of equipment manufacturers and distributors of noise control products is also provided as a resource.

1. Engineering Controls

Mills and preparation plants do not exhibit the acoustical characteristics of a single, constant diffuse noise field. There are many noise sources and the additive effects appear to generate one diffuse sound field having a constant sound level however, distancing the miner from a specific noise source may result in a lowering of the noise exposure. Distance is a good noise control, but it is hard to administratively regulate however, barriers may be used as a substitute for distance.

A. Barriers

Barriers reduce noise exposure by isolating miners from the sound source and can be applied to practically all noise sources. The barrier can be as simple as a suspended piece of curtain or as complex as a concrete wall or control room. The primary purpose is to disturb or interrupt the noise path. Many types of materials are available depending on the noise source and plant layout.

The use of clear vinyl curtains has been proven to provide a cost-effective barrier around equipment, walkways, stairwells, and work stations. Curtains can be purchased in various thickness, widths, and lengths, and are generally adaptable to most installations. There should be a sufficient overlap of curtains to ensure their effectiveness.



Clear Vinyl-Strip Curtain



Control Booth

Solid walls, floors, and total enclosures such as booths, can also be constructed as barriers. A variety of ordinary building materials may be used. Noise control materials may also be engineered into the construction.

B. Equipment Controls

Stationary pieces of equipment in mills and preparation plants are the primary noise generating sources. These are the large pieces of machinery that perform multiple functions, such as sizing and classifying the product. There have been no recent noise control innovations in the design of mills and preparation plant equipment; however, there are engineering principles that can be applied to reduce employee exposure.

A good routine maintenance program that includes tightening loose parts, lubrication, and replacement of worn material is a must. Vibration isolation mounts are also available for most equipment. The mounts help isolate the plant's components and reduce noise generation and transmission.

Noise reduction can also be accomplished by replacement of existing components with quieter equipment, using a different process, or relocating equipment. This may not be feasible for larger pieces of equipment due to process requirements, size, and cost; however, as facilities are upgraded or equipment wears out, these options should be considered.

C. Other Controls

Many processes in mills and preparation plants can be remotely monitored using technology. Remote cameras are available to watch certain areas in the plant to reduce the time miners spend in noisy areas. Technology also exists to monitor plant functions and adjust the material flow and processes from a remote location. Routine preventive maintenance and breakdowns can also be predicted by monitoring the temperature, vibration, and amperage of plant equipment.

Relocation of equipment controls is another method to reduce personnel noise exposure. Plant circuit operators can have their controls moved behind a barrier or into a quiet booth. Lubrication hoses can also be routed to a central location where noise controls can be utilized or the use of automatic lubrication devices implemented.

2. Administrative Controls

There are many possible combinations of administrative controls that may be used to reduce employee noise exposure. The issue is too variable and complex to discuss at length due to employee specialization, wage agreements, and employee availability, among other considerations.

The general techniques to consider are time management, including maintenance during idle time and worker rotation. In addition, dividing routine work between different shifts and changing the actual shift length are administrative controls that can be utilized.

3. Summary

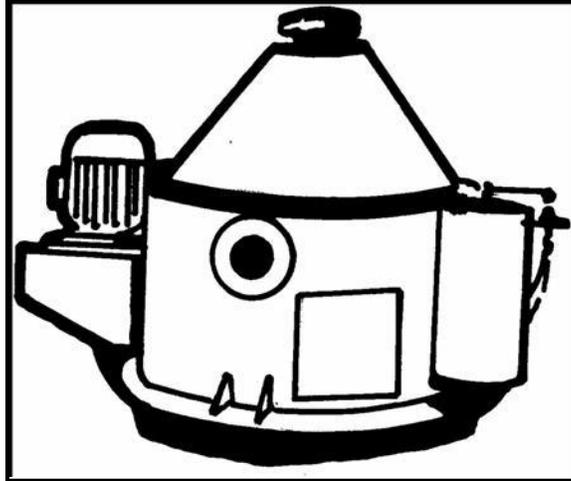
There is no single control that will eliminate mill and preparation plant noise. A combination of controls will be needed to reach the goal of reducing employee noise exposure. Meaningful reductions can be achieved with the use of some or all of the engineering controls discussed in this document. While reductions may not be attained with engineering controls alone, they may make previously impractical administrative controls feasible.

Due to longevity of mills and preparation plants, noise controls are an important consideration when these plants are designed and built. While controls should be engineered into new plant construction, where that has not been done, they should be added as a retrofit.

NOTE - Many of the controls previously discussed are applicable to all or some of the types of equipment listed on the following pages. They will not be repeated for each individual equipment type.

CENTRIFUGAL DEWATERERS

A centrifugal dewaterer is a rotating device used to separate suspended colloidal particles such as clay or coal from slurry. The centrifugal force created by the rotation causes the particles to move from the center of the dewaterer to the outside edges where they are collected.



1. Original Equipment Manufacturer (OEM)

The following is a list of OEMs that manufacture centrifugal dewatering machines.

- A. Andritz Separation, Inc.
- B. Conn-Weld Industries, Inc.
- C. F.L. Smidth – Krebs
- D. F.L. Smidth – Salt Lake City, Inc.
- E. Guyan Heavy Equipment
- F. Sweco

Information from the manufacturers' indicates that there is no noise controls incorporated into the new equipment of this type. Centrifugal dewatering machines without noise controls need to have additional retrofit noise controls.

2. Retrofit Noise Controls

This section is for centrifugal dewatering machines without noise controls. The effectiveness of noise controls is dependent upon the quality of both the acoustical materials and installation techniques.

If a retrofit kit is unavailable, the acoustical material may be purchased in bulk form using Appendix C as a reference.

The majority of noise associated with centrifugal dewatering equipment is produced by the high-speed circulating internal pump parts and drive motors.

A. Acoustical Enclosure around the Equipment

The enclosure can be either a prefabricated metal, lead-vinyl curtain, or a clear vinyl-strip curtain. The type of enclosure chosen will generally be determined by the equipment's dimensions, maintenance requirements, and the cost of the enclosure.

B. Acoustical Enclosure for Operators in the Area

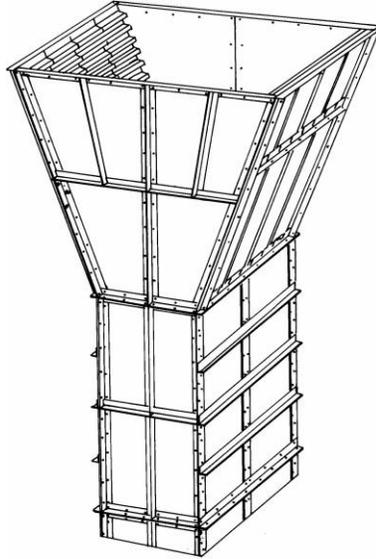
Operator enclosures can be purchased prefabricated with acoustical windows/doors, heating, air-conditioning, lighting, and communications already designed into the enclosure. An alternative to purchasing would be to construct an enclosure using common building supplies.

3. Alternative Technology

There is no alternative technology.

CHUTES

Chutes are used to transport material in a confined area. They are commonly utilized in preparation plants allowing material to fall through them to a lower level for further processing or to be deposited for stockpiling.



1. Original Equipment Manufacturer (OEM)

The following is a list of OEMs that have noise controls available for chutes. Dealers should be contacted for specific needs and details.

- A. Aggregates Equipment, Inc.
- B. Ceramic Technology, Inc.
- C. Cerline Ceramic Corporation
- D. Chapel Steel
- E. Daniels Company
- F. Jervis B. Webb Company
- G. Kanawha Manufacturing Co.
- H. Metso Minerals Industries, Inc.
- I. Sly Inc.
- J. Trelleborg Engineered Systems
- K. Weir Minerals Linatex

2. Retrofit Noise Controls

A. Chute Liners and Wear Resistant Material

The following is a list of manufacturers that have retrofit noise controls available for chutes.

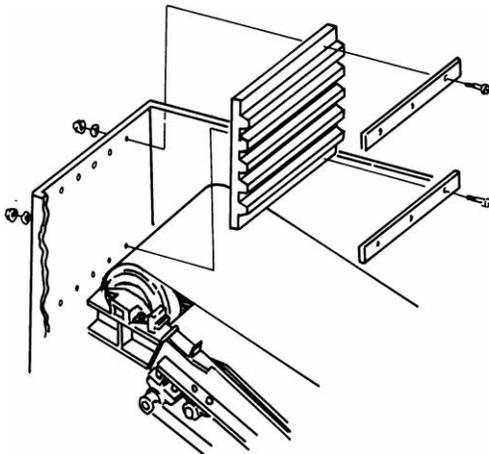
1. Aggregates Equipment, Inc.
2. Ceramic Technology, Inc.
3. Cerline Ceramic Corporation
4. C.U.E., Inc.
5. Metso Minerals Industries, Inc.
6. Trelleborg Engineered Systems
7. Weir Minerals Linatex

B. Rock Boxes/Dead Beds

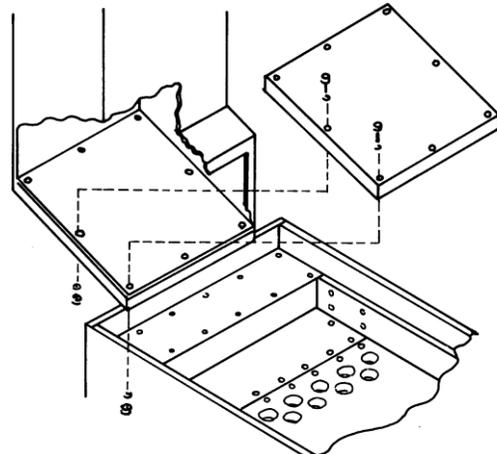
Another method to reduce the impact noise generated by the flow of material in chutes is to create rock boxes or dead beds. This allows the product to accumulate in impact areas, resulting in the moving product impacting upon itself, instead of against the metal chute.

C. Wrapping Chute with Composite Acoustical or Vibration Damping Material

Enclosing the entire chute with a composite acoustical material can help contain some of the noise generated from the flow of material. The walls of the chute also vibrate when material strikes them. This vibration can be reduced by applying or fastening a vibration damping material to the walls. The material is designed to strengthen the walls and reduce the resonance.



Noise Damping Material Applied at a Conveyor Transfer Point



Noise Damping Material Applied to the Base of a Chute

3. Alternative Technology

There is no alternative technology.

COMPRESSORS/COMPRESSED AIR

A compressor is a machine driven by a power take off, an internal combustion engine, or an electric motor to generate compressed air. This compressed air can be used to discharge cement from mills, carry material through air slides, and unblock clogs in chutes. Another use is to power drills on the surface and underground.



1. Original Equipment Manufacturer (OEM)

The following is a listing of the OEMs that have noise controls available for compressors. Dealers and rebuild shops should be contacted for specific needs and details.

- A. Gardner-Denver, Inc.
- B. Ingersoll-Rand
- C. Sullair Corporation

Information from the manufacturers indicates that the noise controls incorporated into the new equipment are in the form of sound absorption material behind door covers and exhaust mufflers. For compressors without noise controls, additional retrofit noise controls are needed.

2. Retrofit Noise Controls

This section is for compressors without noise controls. The effectiveness of noise controls is dependent upon the quality of both the acoustical materials and the installation techniques.

If a retrofit kit is unavailable, acoustical materials may be purchased in bulk using Appendix B as a reference.

The majority of noise associated with compressors is produced by the internal parts, cooling fan blades, and the compressed air exhaust.

A. Acoustical Enclosure around the Equipment

The enclosure can be either a prefabricated metal, lead-vinyl curtain, or a clear vinyl-strip curtain. The type of enclosure chosen will generally be determined by the equipment's dimensions, maintenance requirements, and the cost of the enclosure.

B. Re-route the Intake and Exhaust of the Compressor and Various Air-Driven Tools

A 90-degree elbow can be installed on the intake of a compressor. The elbow will redirect the noise above the employees' ear level. An elbow may be purchased or constructed using common building supplies.



Example of a 90-degree Elbow



Re-route Intake



Re-route Exhaust

The exhaust from air-driven tools and components can also be vented to another area of the plant or outside the facility. This can be accomplished using hydraulic hose and fittings or ordinary PVC pipe.

C. Acoustical Enclosure for Operators in the Area

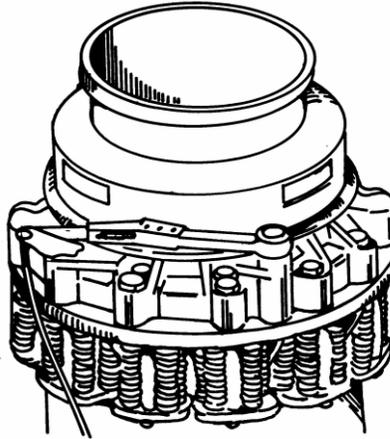
Prefabricated operator enclosures can be purchased with acoustical windows/doors, heating, air conditioning, lighting, and communications already designed into the enclosure. An alternative would be to construct an enclosure using common building supplies.

3. Alternative Technology

There is no alternative technology.

CRUSHERS

Crushers are utilized to reduce the size of material passing through them. Among the various types of crushers are the cone, impact, gyratory, and roller. Crushers are frequently used in tandem with the primary crusher located in the pit and secondary ones in a processing plant. Underground crushers are utilized prior to transporting the ore out of the mine.



1. Original Equipment Manufacturer (OEM)

The following list illustrates OEMs that have noise controls available for crushers, but is not all inclusive. The companies listed represent the major suppliers of crushers.

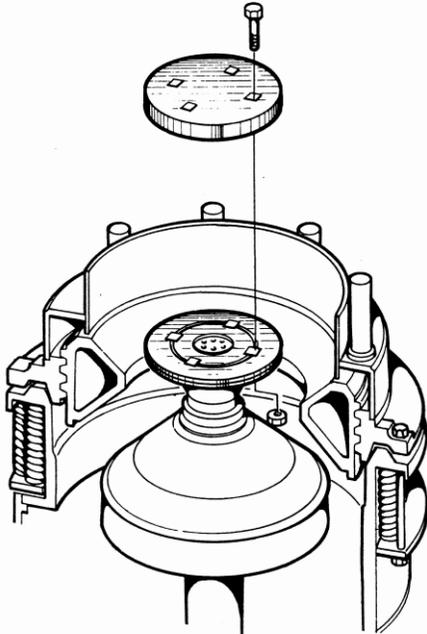
- A. Cedarapids, Inc.
- B. Eagle Crusher Company
- C. Hazemag USA, Inc.
- D. Komatsu America Corp.
- E. Metso Minerals Industries, Inc.
- F. P&H MinePro Services
- G. Pennsylvania Crusher Corporation
- H. Telsmith, Inc.

2. Retrofit Noise Controls

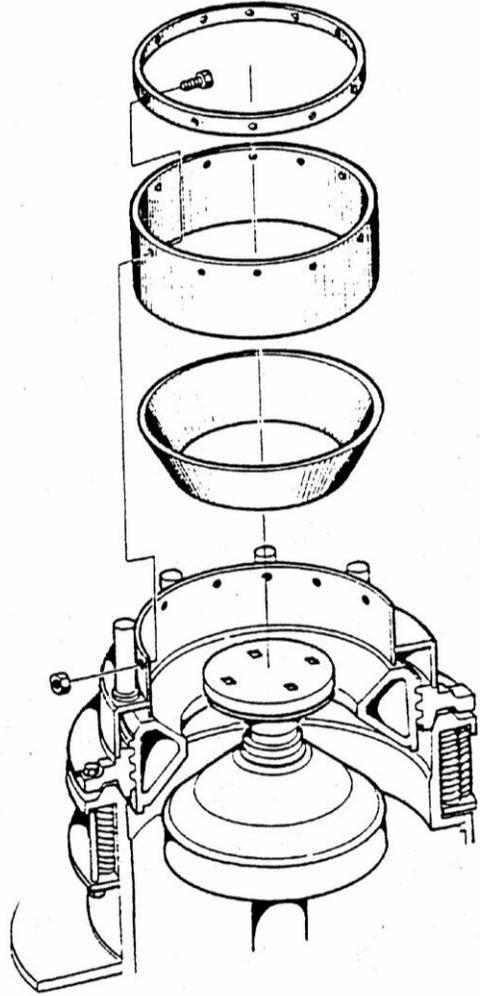
The utilization of retrofit noise controls on crushers is somewhat limited. None of the following manufacturers actively market noise controls for crushers. Resilient crusher feed plates, resilient feed cone liners, and mass-loaded barrier curtains are available from a variety of manufacturers (see Appendix B).

- A. Cedarapids, Inc.
- B. C.U.E., Inc.
- C. Eagle Crusher Company
- D. Goodman-Hewitt
- E. Hazemag USA, Inc.

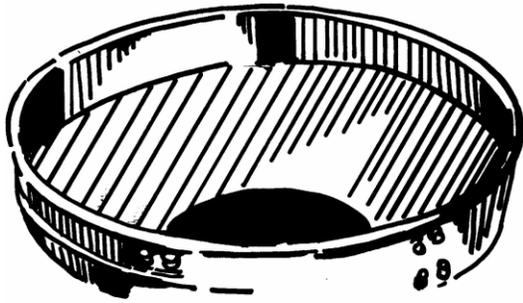
- F. Komatsu America Corp.
- G. Metso Minerals Industries, Inc.
- H. P&H MinePro Services
- I. Pennsylvania Crusher Corporation
- J. TelSmith, Inc.



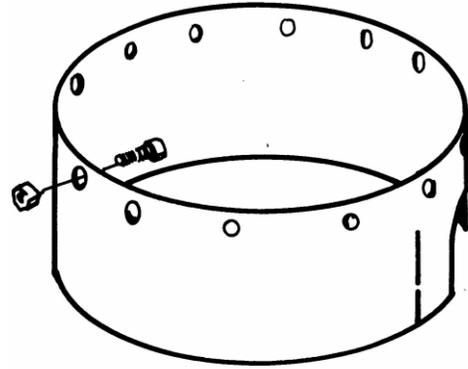
Installation of a Resilient Crusher Feed Plate



Installation of a Resilient Crusher Feed Cone Shell



Installation of One-Piece Resilient Crusher
Feed Core Liner



Barrier Curtain for Crusher Mainframe

If the crusher power is supplied by an internal combustion engine, an appropriately matched and maintained exhaust system is very effective in reducing the overall sound levels. The termination point of the muffler should be pointed away from the crusher operator.

A. Acoustical Enclosure for Operations in the Area

The most effective noise control that can be implemented in conjunction with crushers is a well-designed, acoustically-treated control booth. The effectiveness of such booths is greatly enhanced by structurally isolating them from the crusher or de-coupling them from the mainframe of the crusher with air bags. Visibility requirements can be met through either the use of appropriately-positioned windows or with remote-controlled cameras.

B. Acoustical Enclosure around the Equipment

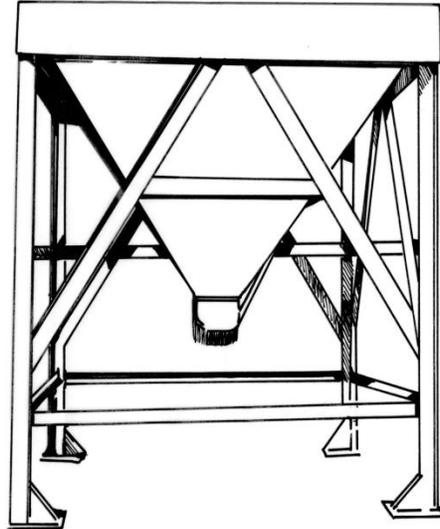
The enclosure can be a prefabricated metal, lead-vinyl curtain, or clear vinyl-strip curtain. An acoustical enclosure may be the best alternative for small crushers. Large crushers should be located outside or away from the facility, if possible.

3. Alternative Technology

There is no alternative technology.

HOPPERS

Hoppers are vessels into which materials are fed for future discharge at a controlled rate. Typically, they are constructed in an inverted pyramid or cone shape. They are most commonly found in the crushed stone and surface coal industries.



1. Original Equipment Manufacturer (OEM)

The following table illustrates OEMs that have noise controls available for new hoppers. Retrofit noise control kits are typically not available from OEMs. Dealers should be contacted for availability and further details.

- A. Continental Manufacturing Company
- B. Daniels Company
- C. Dover Conveyor Inc.
- D. Manufacturers Equipment Company
- E. Saint-Gobain Ceramic Materials
- F. Trelleborg Engineered Systems
- G. Universal Engineering
- H. Vibra Screw Incorporated

2. Retrofit Noise Controls

Noise from impact points may be successfully treated through the installation of the products listed in the following list. Consultation with the manufacturers regarding specific applications is highly recommended in determining feasibility.

A. Hopper Liners and Wear Resistant Material

The following is a list of manufacturers that have retrofit noise controls available for hoppers. Dealers should be contacted for specific needs and details.

1. Aggregates Equipment, Inc.
2. Ceramic Technology, Inc.
3. Cerline Ceramic Corporation
4. C.U.E., Inc.
5. Metso Minerals Industries, Inc.
6. Weir Minerals Linatex

For smaller hoppers and transfer areas, the retrofit noise controls for chutes may be applicable. Acoustical operator enclosures with cameras may also be a solution. If a retrofit kit is unavailable, acoustical materials may be purchased in bulk using Appendix B as a reference.

B. Rock Boxes/Dead Beds

Another method to reduce the impact noise generated by the flow of material in hoppers is to create rock boxes or dead beds. This allows the product to accumulate in impact areas, resulting in the moving product impacting upon itself, instead of against the metal hopper.

C. Wrapping Hopper with Composite Acoustical or Vibration Damping Material

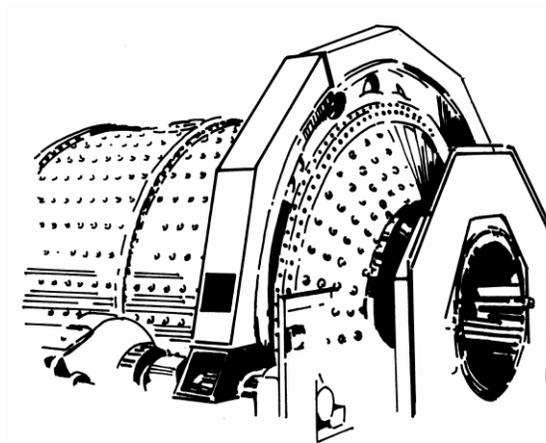
Enclosing the entire hopper with a composite acoustical material can help contain some of the noise generated from the flow of material. The walls of the hopper also vibrate when material strikes them. This vibration can be reduced by applying or fastening a vibration damping material to the walls. The material is designed to strengthen the walls and reduce the resonance.

3. Alternative Technology

There is no alternative technology.

MILLS

Regardless of the type of mill (rod, ball, roller, hammer, etc.), their function is to reduce the size of the material that passes through them. This function is accomplished by impacting the material with metal, thereby creating a noise source in a shell.



1. Original Equipment Manufacturer (OEM)

The following is a partial listing of OEMs that have mills used in the mining industry.

- A. Humboldt Wedag, Inc.
- B. F. L. Smidth, Inc.
- C. Telsmith, Inc.

Information from the manufacturers' indicates that there is no noise controls incorporated into the design of this type of equipment. The only effective noise controls are described in Section 2.

2. Retrofit Noise Controls

The construction of an acoustically-treated operator control room or booth in conjunction with remote-controlled video cameras should minimize the need for a miner to be near the mill(s).

In some situations, the construction of a full or topless enclosure around a free-standing mill(s) has been demonstrated to be an effective method of reducing the overall sound levels for miners whose work station is in the area adjacent to the mill(s). Absorptive acoustical material may be needed within or above such enclosures.

Depending upon the type of milling, the utilization of rubber or synthetic liners can be very effective in reducing the overall sound levels.

The use of acoustical/thermal blankets is a technologically achievable engineering noise control. Retrofit noise control kits may be available from manufacturers listed in the following list. Consultation with the manufacturers regarding specific applications is highly recommended in determining feasibility.

- A. Acoustical Systems, Inc.
- B. BRD Noise & Vibration Control, Inc.

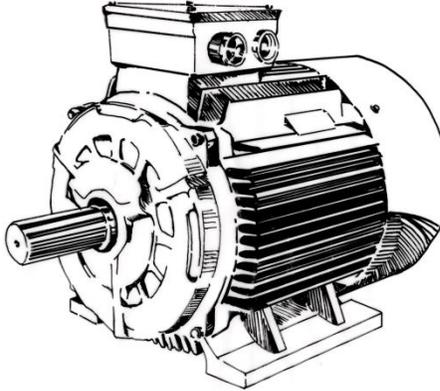
If a retrofit kit is unavailable for the aforementioned noise controls, the materials may be purchased in bulk using Appendix B as a reference.

3. Alternative Technology

There is no alternative technology.

MOTORS

Motors are used throughout preparation plants to drive machinery, pumps, fans, shaker screens, crushers, conveyor belts, etc.



1. Original Equipment Manufacturer (OEM)

The following is a listing of the OEMs for motors. Dealers and rebuild shops should be contacted for specific needs and details.

- A. Baldor Electric Company
- B. General Electric

Information from the manufacturers indicates that there is no noise controls incorporated into the new equipment of this type. The majority of noise associated with motors is produced by the high-speed, revolving internal parts and the cooling fan blades. One-directional cooling fan blades can be installed for noise control on motors. They are quieter than the unidirectional ones. For details regarding retrofit approaches, see Section 2.

2. Retrofit Noise Controls

This section is for motors without noise controls. The effectiveness of noise controls is dependent upon the quality of both the acoustic materials and the installation techniques.

If a retrofit kit is unavailable, acoustical materials may be purchased in bulk using Appendix B as a reference.

A. Acoustical Enclosure around the Equipment

The enclosure can be a pre-fabricated metal, lead-vinyl curtain, or clear vinyl-strip curtain. The type of enclosure chosen will generally be determined by the equipment's dimensions, maintenance requirements, and the cost of the enclosure.

B. Acoustical Enclosure for Operators in the Area

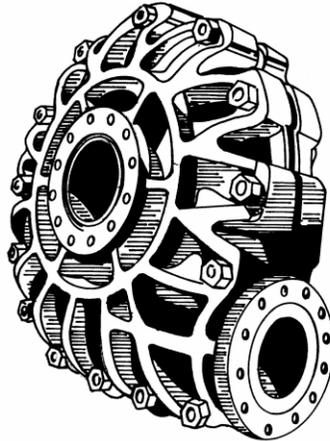
Pre-fabricated operator enclosures can be purchased with acoustical windows/doors, heating, air-conditioning, lighting, and communications already designed into the enclosure. An alternative to purchasing would be to construct an enclosure using common building supplies.

3. Alternative Technology

There is no alternative technology.

PUMPS

Pumps are utilized to either push or pull liquids through a tube or pipe. They can be used to power automatic lubricating systems, provide water over shaker screens, reduce the level of water in sumps, and move slurries through centrifugal dewaterers.



1. Original Equipment Manufacturer (OEM)

The following is a listing of OEMs for pumps used in the mining environment. Dealers should be contacted for specific needs and details.

- A. F.L. Smidth, Inc.
- B. F.L. Smidth – Salt Lake City, Inc.
- C. GIW Industries
- D. Goodwin International
- E. ITT – Goulds Pumps
- F. Robbins & Myers, Inc.
- G. Versa-Matic Pump

Information from the manufacturers indicates that noise controls have not been incorporated into equipment of this type since the equipment is designed to move either a fluid or slurry. Many of the companies are precisely balancing the internal moving parts to reduce vibration. The pumps are powered by electric motors, hydraulic fluid, or compressed air. These power sources and/or pumps can sometimes be located inside buildings or enclosures to help reduce the overall noise. This is dependent upon the size and location of the equipment. Dealers can generally advise customers on their particular application. For details regarding retrofit approaches, see Section 2.

2. Retrofit Noise Controls

This section is for pumps that are without noise controls or are not located inside an enclosure. The effectiveness of noise controls is dependent upon the quality of both the acoustic materials and the installation techniques.

- A. Goodyear Tire & Rubber Co.
- B. Metso Minerals Industries, Inc.
- C. Weir Minerals Linatex

If a retrofit kit is unavailable, the materials may be purchased in bulk using Appendix B as a reference.

The majority of noise associated with pumps is produced by the motors/engines needed to operate the pumps and the high-speed, revolving internal parts.

A. Acoustical Enclosure around the Equipment

The enclosure can consist of a prefabricated metal enclosure or a site-built enclosure using common building materials or dense loaded, vinyl-hanging curtain type arrangement. The type of enclosure will generally be determined by the equipment's dimensions, location, maintenance requirements, and the cost of the enclosure. Another consideration would be if the enclosure will be permanent or temporary.

B. Acoustical Enclosure for Operators in the Area

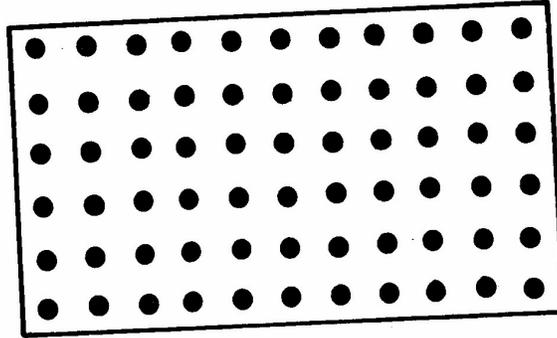
Pre-fabricated operator enclosures can be purchased with acoustical windows/doors, heating, air conditioning, lighting, and communications already designed into the enclosure. An alternative to purchasing would be to construct an enclosure using common building supplies.

3. Alternative Technology

There is no alternative technology.

SCREENS – CLASSIFYING

Classifying screens are used both in preparation plants and outdoor facilities. They come in a number of configurations, i.e. single, double, or triple decks, wet, dry, or heated. Their basic function is to size the material that passes over them. This is accomplished by the size of the openings in the screen decking.



1. Original Equipment Manufacturer (OEM)

The following list illustrates the OEMs that have noise controls available for screens (classifying). Dealers should be contacted for specific needs and details.

- A. C.U.E., Inc.
- B. Derrick Corporation
- C. Firestone Industrial Products Company
- D. Goodman-Hewitt
- E. Metso Minerals Industries, Inc.
- F. Polydeck Screen Corporation
- G. Tema Systems, Inc.
- H. Weir Minerals Linatex

Information from the manufacturers indicates that there is some noise controls incorporated into new equipment of this type. For classifying screens without noise controls, additional retrofit noise controls are needed.

For details regarding retrofit approaches, see Section 2.

2. Retrofit Noise Controls (Screens with built-in noise controls)

A. Acoustically Treated Decking

Screening equipment (total unit comprised of frame, motors, and decking) is generally ordered for specific customer needs; however, the decking is usually purchased from a manufacturer separate from the one building the screen equipment. If the purchaser requests acoustical decking and supplies, it will be installed on the new equipment according to the specifications provided. This decking can be either rubber-clad, covered with a polyurethane material, or a combination of both.

B. Pre-Specified Buyer Noise Controls

Screening equipment manufacturers will attempt to incorporate any noise controls into the new equipment that the purchaser specifies at the time of the order.

3. Retrofit Noise Controls (Screens without noise controls)

This section is for classifying screens without noise controls. The effectiveness of noise controls is dependent upon the quality of both the acoustic materials and installation techniques.

If a retrofit kit is unavailable, acoustical materials may be purchased in bulk using Appendix B as a reference.

The majority of noise associated with classifying screens is produced by the vibration of the screen/frame and the material being transported over the screen.

A. Install New Decking Material

Replace the screen decking with newer polyurethane-based decking, if possible. This would also include non-metallic or dampened steel side plates where material would also impact.

B. Install New Suspension Springs

Install new suspension springs to the deck framing so that vibration is contained to the unit and isolated from other structures. These can be in the form of rubber, coil spring, or air bag suspension, where applicable.

C. Acoustical Enclosure for Operators in the Area

Operator enclosures can be purchased prefabricated with acoustical windows/doors, heating, air conditioning, lighting, and communications already designed into the enclosure. An alternative to purchasing would be to construct an enclosure using common building supplies.

D. Acoustical Enclosure around the Equipment

The enclosure can be a prefabricated metal, lead-vinyl curtain, or clear vinyl-strip curtain type. The type of enclosure chosen will generally be determined by the equipment's dimensions, maintenance requirements, and cost of the enclosure.

E. Acoustical Enclosure around Drive Mechanisms

Fabricate small acoustical enclosures around drive mechanisms to isolate and control this noise.

4. Alternative Technology

There is no alternative technology.

APPENDIX A

A Partial Listing of Equipment Manufacturers

Acoustical Systems, Inc.
 P.O. Box 146
 Vandalia, OH 45377-0146
 Phone: 937.898.3198
www.acousticalsystems.com

Aggregates Equipment, Inc.
 9 Horseshoe Road
 Leola, PA 17540-0039
 Phone: 717.656.2131
 Fax: 717.656.6686
www.aggregatesequipment.com

Andritz Separation, Inc.
 1010 Commercial Boulevard S.
 Arlington, TX 76001
 Phone: 817.465.5611
 Fax: 817.468.3961
www.andritz.com

Baldor Electric Company
 5711 R.S. Boreham, Jr. Street
 Fort Smith, AR 72901
 Phone: 479.646.4711
 Fax: 479.648.5792
<http://www.baldor.com/>

BRD Noise & Vibration Control, Inc.
 112 Fairview Avenue
 Wind Gap, PA 18091
 Phone: 610.863.6300
www.brd-nonoise.com

Ceramic Technology, Inc.
 606 Wardell Industrial Park Road
 Cedar Bluff, VA 24609
 Phone: 800.437.1142
www.ceramictech.net

Cerline Ceramic Corporation
 619 W. 14th St.
 Anderson, IN 46016
 Phone: 765.649.7222
 Fax: 765.649.6632
www.mofabinc.com

Chapel Steel
 590 N. Bethlehem Pike
 Lower Gwynedd, PA 19002
 Phone: 215.793.0899
 Fax: 215.793.0919
www.chapelsteel.com

Cisco-Eagle
 2120 Valley View Lane
 Dallas, TX 75234
 Phone: 800.877-3861
 Fax: 972.406.9577
www.cisco-eagle.com

Conn-Weld Industries, Inc.
 U.S. Route 460 & State Route 31
 Princeton, WV 24740
 Phone: 304.487.1421
 Fax: 304.487.3761
www.conn-weld.com

Continental Manufacturing Company
 2275 Cassens Court, Ste. 105
 St. Louis, MO 63026
 Phone: 800.777.5852
 Fax: 636.680.2037
www.marcosolutions.net

C.U.E., Inc.
 11 Leonberg Road
 Cranberry Township, PA 16066
 Phone: 800.283.4621
 Fax: 724.772.5280
www.cue-inc.com

Daniels Company
 238 Markell Dr.
 Bluefield, WV 24701-7350
 Phone: 304.327.8161
 Fax: 304.327.5118
www.daniels-wv.com

Derrick Corporation
 590 Duke Rd.
 Buffalo, NY 14225
 Phone: 716.683.9010
 Fax: 716.683.4991
www.derrickcorp.com

Dover Conveyor, Inc.
 3323 Brightwood Rd.
 Midvale, OH 44653
 Phone: 740.922.9390
 Fax: 740.922.9391
www.doverconveyor.com

Eagle Crusher Company
 525 S. Market Street
 P.O. Box 537
 Galion, OH 44833
 Phone: 800.253.2453
www.eaglecrusher.com

F. L. Smidth, Inc.
 2040 Avenue C
 Bethlehem, PA 18017
 Phone: 610.264.6011
 Fax: 610.264.6170
www.flsmidth.com

F.L. Smidth Krebs
 5505 W. Gillette Road
 Tucson, AZ 85743-9501
 Phone: 520.744.8200
 Fax: 520.744.8300
www.flsmidth.com

F.L. Smidth Salt Lake City, Inc.
 7158 S. FLSmidth Drive
 Midvale, UT 84047-5559
 Phone: 801.871.7000
 Fax: 801.871.7001
www.flsmidth.com

Firestone Industrial Products Company
 250 W. 96th Street
 Indianapolis, IN 46260
 Phone: 800.247.4337
www.firestoneindustrial.com

Gardner Denver, Inc.
 1800 Gardner Expressway
 Quincy, IL 62305
 Phone: 217.222.5400
 Fax: 217.223.5897
www.gardnerdenver.com

General Electric
 3135 Easton Turnpike
 Fairfield, CT 06828
 Phone: 203.373.2211
www.ge.com

GIW Industries
 5000 Wrightsboro Road
 Grovetown, GA 30813-2842
 Phone: 706.863.1011
 Fax: 706.860.5897
www.giwindustries.com

Goodman-Hewitt
 P.O. Box 866
 645 Floyd Wright Drive
 Belton, SC 29627
 Phone: 800.388.7701
 Fax: 864.338.8732
www.goodmanconveyor.com

Goodwin International
 Ivy House Foundry
 Ivy House Road
 Hanley
 Stoke-on-Trent
 Staffordshire
 ST1 3NR
 United Kingdom
 Phone: +44(0) 1782.220.000
 Fax: +44(0) 1782.208.060
www.goodwinplc.com

Goodyear Tire & Rubber Co.
1144 E. Market Street
Akron, OH 44316-0001
Phone: 330.796.2121
Fax: 330.796.2222
www.goodyear.com

Guyan Heavy Equipment
3016 Main Street
Box 1270
Chapmanville, WV 25508
Phone: 877.443.8021
Fax: 304.855.5414
www.guyanheavyequipment.com

Hager Equipment Co. of Al., Inc.
1901 Morgan Road SE
Bessemer, AL 35022
Phone: 205.424.1363
www.hagerequipment.com

Hazemag USA, Inc.
P.O. Box 1064
Uniontown, PA 15401
Phone: 724.439.3512
Fax: 724.439.3514
www.hazemag.com

Humboldt Wedag, Inc.
400 Technology Parkway
Norcross, GA 30092
Phone: 770.810.7315
www.khd.com

Ingersoll-Rand
Air Solutions
800-E Beaty Street
Davidson, NC 28036
Phone: 704.655.4000
www.ingersollrand.com

ITT – Goulds Pumps
240 Fall Street
Seneca Falls, NY 13148
Phone: 315.568.2811
Fax: 315.568.2418
www.gouldspumps.com

Jervis B. Webb Company
34375 W. Twelve Mile Road
Farmington Hills, MI 48331
Phone: 800.526.9322
Fax: 248.553.1228
www.jervisbwebb.com

Kanawha Manufacturing Co.
1520 Dixie Street
Charleston, WV 25326-1786
Phone: 304.342.6127
Fax: 304.343.4113
www.kanawhamfg.com

Komatsu America Corp.
One Continental Towers
1701 W. Golf Road
Rolling Meadows, IL 60008
Phone: 847.437.5800
www.komatsuamerica.com

Manufacturers Equipment Company
35 Enterprise Drive
Middletown, OH 45044-8924
Phone: 800.642.6326
Fax: 513.424.3576
www.mecoservices.com

Metso Minerals Industries, Inc.
20965 Crossroads Circle
Waukesha, WI 53186
Phone: 262.717.2500
Fax: 262.717.2501
www.metso.com

P&H MinePro Services
4400 West National Avenue
Milwaukee, WI 53214
Phone: 414.671.4400
Fax: 414.671.7236
www.minepro.com

Pennsylvania Crusher Corporation
600 Abbott Drive
Broomall, PA 19008-0100
Phone: 610.544.7200
Fax: 610.543.0190
www.penncrusher.com

Polydeck Screen Corporation
1790 Dewberry Road
Spartanburg, SC 29307
Phone: 864.579-4594
Fax: 864.579.2819
www.polydeckscreens.com

Robbins & Myers, Inc.
10586 Highway 75N
Willis, TX 77378
Phone: 936.890.1064
www.robbsmyers.com

Saint-Gobain Ceramic Materials
Wear Resistant Technologies Dept.
4702 Route 982
Latrobe, PA 15650
Phone: 800.438.7237
Fax: 724.539.6070
www.wrt.saint-gobain.com

Sandvik Mining and Construction
300 Technology Court
Smyrna, GA 30082
Phone: 404.589.3800
Fax: 404.589.2900
www.miningandconstruction.sandvik.com

Sly, Inc.
8300 Dow Circle
Strongsville, OH 44136
Phone: 800.334.2957
Fax: 440.891.3210
www.slyinc.com

Sullair Corporation
3700 East Michigan Blvd.
Michigan City, IN 46360
Phone: 800.785.5247
Fax: 219.874.1252
www.sullair.com

Sweco
P. O. Box 1509
8029 US Highway 25
Florence, KY 41042
Phone: 800.807.9326
Fax: 859.283.8469
www.sweco.com

Telsmith, Inc.
10910 N. Industrial Drive
P.O. Box 539
Mequon, WI 53092
Phone: 262.242.6600
Fax: 262.242.5812
www.telsmith.com

Tema Systems, Inc.
7806 Redsky Drive
Cincinnati, OH 45249
Phone: 513.489.7811
Fax: 513.489.4817
www.tema.net

Terex Cedarapids, Inc.
909 17th Street NE
Cedar Rapids, IA 52402
Phone: 800.821.5600
Fax: 319.399.4871
www.cedarapids.com

Trelleborg Engineered Systems
25 Glassford Road
Kewdale WA 6105
Australia
Phone: +61 8 9256.6000
Fax: +61 8 9353.5990
www.trelleborg.com.au

Universal Engineering
800 First Avenue N.W.
Cedar Rapids, IA 52405-3999
Phone: 800.366.2051
Fax: 319.369.5440
www.universalcrusher.com

Versa-Matic Pump
800 North Main Street
Mansfield, OH 44902
Phone: 419.526.7296
Fax: 419.526.7289
www.versamatic.com

Vibra Screw Incorporated
755 Union Boulevard
Totowa, NJ 07512
Phone: 973.256.7410
Fax: 973.256.2114
www.vibrascrewinc.com

Weir Minerals Linatex North America
3459 South 700 West
Salt Lake City, UT 84119
Phone: 801.574.2100
Fax: 801.261.5587
www.weirminerals.com

Weir Specialty Pumps
440 West 800 South
P. O. Box 209
Salt Lake City, UT 84101
Phone: 801.359.8731
Fax: 801.355.9303
www.weirpowerindustrial.com

APPENDIX B

Buyer's Guide for Noise Control Products

(Reproduced with permission of *Sound and Vibration* magazine.)

This information is also available at www.sandv.com under Issues ->
Buyers Guides -> July 20xx -> Buyers Guide to Products for Noise and Vibration Control

Sound Absorptive Materials

1. Felts
2. Foams
3. Glass Fiber
4. Mineral Fiber
5. Perforated Sheet Metal
6. Spray-On Coatings
7. Wall Treatments

3M E-A-R
7911 Zionsville Rd.
Indianapolis, IN 46268
Phone: 877.327.4332
Fax: 317.692.3111
info@earsc.com
www.earsc.com
(1, 2)

Acoustax Noise Barriers
243 W Eighth St.
PO Box 4174
Wyoming, PA 18644
Phone: 800.233.9601
Fax: 570.693.3500
info@acoustax.com
www.acoustax.com
(5)

Acoustiblok, Inc.
6900 Interbay Blvd.
Tampa, FL 33616
Phone: 813.980.1140
Fax: 813.849.6347
info@acoustiblok.com
www.acoustiblok.com
(5, 7)

Acoustical Surfaces
123 Columbia Court N.
Chaska, MN 55318
Phone: 800.854.2948
Fax: 952.448.2613
info@acousticalsurfaces.com
www.acousticalsurfaces.com
(2, 5, 7)

American Acoustical Products/Ward Process
311 Hopping Brook Rd,
Holliston, MA 01746
Phone: 508.429.1165
Fax: 508.429.8543
info@aapusa.com
www.aapusa.com
(2-5, 7)

Blachford, Inc.
1400 Nuclear Drive
West Chicago, IL 60185
Phone: 630.231.8300
Fax: 630.231.8321
info@blachford.com
www.blachford.com
(1-5, 7)

Eckel Industries
Acoustic Division
155 Fawcett St.
Cambridge, MA 02138
Phone: 617.491.3221
Fax: 617.547.2171
info@eckelusa.com
www.eckelusa.com
(5, 7)

Ferguson Perforating
130 Ernest St.
Providence, RI 02905
Phone: 800.341.9800
Fax: 401.941.2950
info@fergusonperf.com
www.fergusonperf.com
(5)

George Koch Sons, LLC.
10 S. Eleventh Avenue
Evansville, IN 47712
Phone: 888.873.5624
Fax: 877.726.5427
info@kochllc.com
www.kochllc.com
(4)

Industrial Acoustics Co. Inc.
1160 Commerce Ave.
Bronx, NY 10462
Phone: 718.931.8000
Fax: 718.863.1138
info@industrialacoustics.com
www.industrialacoustics.com
(7)

Industrial Noise Control, Inc.,
401 Airport Rd.
North Aurora, IL 60542
Phone: 800.954.1998
Fax: 800.420.4928
info@industrialnoisecontrol.com
www.industrialnoisecontrol.com
(1, 4, 5, 7)

International Cellulose, Inc.
12315 Robin Blvd.
Houston, TX 77045
Phone: 800.444.1252
Fax: 713.610.4761
info@internationalcellulose.com
www.spray-on.com
(6)

Kinetics Noise Control, Inc.,
6300 Ireland Place
Dublin, OH 43017
Phone: 877.457.2695
Fax: 614.889.0540
info@kineticsnoise.com
www.kineticsnoise.com
(2, 3, 5, 7)

Maxxon Corp.
920 Hamel Rd.
P.O. Box 253
Hamel, MN 55340
Phone: 800.356.7887
Fax: 763.478.2431
info@maxxon.com
www.maxxoncorporation.com
(1)

MBI Products Company
801 Bond St.
Elyria, OH 44035
Phone: 440.322.6500
Fax: 440.322.1900
info@mbiproducts.com
www.mbiproducts.com
(7)

McGill Air Silence, LLC,
2400 Fairwood Ave.
Columbus, OH 43207-2700
Phone: 614.829.1200
Fax: 614.829.1488
info@mcgillairsilence.com
www.mcgillairsilence.com
(2-7)

Metal Form Manufacturing
5960 W. Washington St.
Phoenix, AZ 85043
Phone: 602.233.1211
Fax: 602.233.2033
info@mfmca.com
www.mfmca.com
(5)

Pyrok, Inc.
121 Sunset Rd.
Mamaroneck, NY 10543
Phone: 914.777.7070
Fax: 914.777.7103
info@pyrokinc.com
www.pyrokinc.com
(6, 7)

RPG Diffusor Systems, Inc.,
651-c Commerce Drive
Upper Marlboro, MD 20774
Phone: 301.249.0044
Fax: 301.390.3602
info@rpginc.com
www.rpginc.com
(2, 4, 7)

Sound Fighter Systems, LLC.
1305 Airport Dr.
PO Box 7216
Shreveport, LA 71137
Phone: 866.348.0833
Fax: 318.865.7373
info@soundfighter.com
www.soundfighter.com
(7)

Soundown Corporation
16 Broadway
Salem, MA 01970
Phone: 978.745.7000
Fax: 978.745.0900
info@soundown.com
www.soundown.com
(2-5, 7)

Tectum Inc.
105 S. 6th St.
Newark, OH 43055
Phone: 888.977.9691
Fax: 800.832.8869
info@tectum.com
www.tectum.com
(7)

The Soundcoat Company
1 Burt Drive
Deer Park, NY 11729
Phone: 800.394.8913
Fax: 631.242.2246
info@soundcoat.com
www.soundcoat.com
(2)

Sound Absorptive Systems

1. Ceiling Systems
2. Masking Noise Generators
3. Panels
4. Unit Absorbers
5. Wall Treatments

Acoustax Noise Barriers
243 W Eighth St.
PO Box 4174
Wyoming, PA 18644
Phone: 800.233.9601
Fax: 570.693.3500
info@acoustax.com
www.acoustax.com
(3-5)

Acoustiblok, Inc.
6900 Interbay Blvd.
Tampa, FL 33616
Phone: 813.980.1140
Fax: 813.849.6347
info@acoustiblok.com
www.acoustiblok.com
(3, 5)

Acoustical Surfaces
123 Columbia Court N.
Chaska, MN 55318
Phone: 800.854.2948
Fax: 952.448.2613
info@acousticalsurfaces.com
www.acousticalsurfaces.com
(3-5)

American Acoustical
Products/Ward Process
311 Hopping Brook Rd,
Holliston, MA 01746
Phone: 508.429.1165
Fax: 508.429.8543
info@aapusa.com
www.aapusa.com
(3)

Blachford, Inc.
1400 Nuclear Drive
West Chicago, IL 60185
Phone: 630.231.8300
Fax: 630.231.8321
info@blachford.com
www.blachford.com
(1, 3, 5)

Eckel Industries
Acoustic Division
155 Fawcett St.
Cambridge, MA 02138
Phone: 617.491.3221
Fax: 617.547.2171
info@eckelusa.com
www.eckelusa.com
(1, 3-5)

Ferguson Perforating
130 Ernest St.
Providence, RI 02905
Phone: 800.341.9800
Fax: 401.941.2950
info@fergusonperf.com
www.fergusonperf.com
(1, 5)

George Koch Sons, LLC.
10 S. Eleventh Avenue
Evansville, IN 47712
Phone: 888.873.5624
Fax: 877.726.5427
info@kochllc.com
www.kochllc.com
(3, 5)

Industrial Acoustics Co. Inc.
1160 Commerce Ave.
Bronx, NY 10462
Phone: 718.931.8000
Fax: 718.863.1138
info@industrialacoustics.com
www.industrialacoustics.com
(1, 3, 5)

Industrial Noise Control, Inc.,
401 Airport Rd.
North Aurora, IL 60542
Phone: 800.954.1998
Fax: 800.420.4928
info@industrialnoisecontrol.com
www.industrialnoisecontrol.com
(1, 3-5)

Keene Building Products
5910 Landerbrook Dr.
Ste #210
Mayfield Heights, OH 44124
Phone: 877.514.5336
Fax: 440.605.1120
info@keenebuilding.com
www.keenebuilding.com
(1)

Kinetics Noise Control, Inc.,
6300 Irelan Place
Dublin, OH 43017
Phone: 877.457.2695
Fax: 614.889.0540
info@kineticsnoise.com
www.kineticsnoise.com
(1, 3, 5)

MBI Products Company
801 Bond St.
Elyria, OH 44035
Phone: 440.322.6500
Fax: 440.322.1900
info@mbiproducts.com
www.mbiproducts.com
(1, 3, 5)

McGill Air Silence, LLC,
2400 Fairwood Ave.
Columbus, OH 43207-2700
Phone: 614.829.1200
Fax: 614.829.1488
info@mcgillairsilence.com
www.mcgillairsilence.com
(1, 3, 5)

Metal Form Manufacturing
5960 W. Washington St.
Phoenix, AZ 85043
Phone: 602.233.1211
Fax: 602.233.2033
info@mfmca.com
www.mfmca.com
(3, 5)

Pyrok, Inc.
121 Sunset Rd.
Mamaroneck, NY 10543
Phone: 914.777.7070
Fax: 914.777.7103
info@pyrokinc.com
www.pyrokinc.com
(1, 5)

RPG Diffusor Systems, Inc.,
651-c Commerce Drive
Upper Marlboro, MD 20774
Phone: 301.249.0044
Fax: 301.390.3602
info@rpginc.com
www.rpginc.com
(1, 3-5)

Sound Fighter Systems, LLC.
1305 Airport Dr.
PO Box 7216
Shreveport, LA 71137
Phone: 866.348.0833
Fax: 318.865.7373
info@soundfighter.com
www.soundfighter.com
(2-5)

Soundown Corporation
16 Broadway
Salem, MA 01970
Phone: 978.745.7000
Fax: 978.745.0900
info@soundown.com
www.soundown.com
(1, 3, 5)

Tectum Inc.
105 S. 6th St.
Newark, OH 43055
Phone: 888.977.9691
Fax: 800.832.8869
info@tectum.com
www.tectum.com
(1, 3, 5)

Vibro-Acoustics
727 Tapscott Rd.
Scarborough, Ontario,
Canada M1X 1A2
Phone: 800.565.8401
Fax: 888.811.2264

info@vibro-acoustics.com
www.vibro-acoustics.com

(3)

Sound Barrier Materials

1. Pipe Lagging
2. Mass-Loaded Plastics
3. Sealants and Sealing Tapes
4. Sheet Glass, Metal and Plastic

3M E-A-R
7911 Zionsville Rd.
Indianapolis, IN 46268
Phone: 877.327.4332
Fax: 317.692.3111

info@earsc.com
www.earsc.com

(1, 2)

Acoustiblok, Inc.
6900 Interbay Blvd.
Tampa, FL 33616
Phone: 813.980.1140
Fax: 813.849.6347

info@acoustiblok.com
www.acoustiblok.com

(1-3)

Acoustical Surfaces
123 Columbia Court N.
Chaska, MN 55318
Phone: 800.854.2948
Fax: 952.448.2613

info@acousticalsurfaces.com
www.acousticalsurfaces.com

(1)

American Acoustical
Products/Ward Process
311 Hopping Brook Rd
Holliston, MA 01746
Phone: 508.429.1165
Fax: 508.429.8543

info@aapusa.com
www.aapusa.com

(1, 2)

Blachford, Inc.
1400 Nuclear Drive
West Chicago, IL 60185
Phone: 630.231.8300
Fax: 630.231.8321

info@blachford.com
www.blachford.com

(1, 2)

Ferguson Perforating
130 Ernest St.
Providence, RI 02905
Phone: 800.341.9800
Fax: 401.941.2950

info@fergusonperf.com
www.fergusonperf.com

(4)

Industrial Noise Control, Inc.,
401 Airport Rd.
North Aurora, IL 60542
Phone: 800.954.1998
Fax: 800.420.4928

info@industrialnoisecontrol.com
www.industrialnoisecontrol.com

(1, 2)

Kinetics Noise Control, Inc.,
6300 Irelan Place
Dublin, OH 43017
Phone: 877.457.2695
Fax: 614.889.0540

info@kineticsnoise.com
www.kineticsnoise.com

(1, 4)

McGill Air Silence, LLC,
2400 Fairwood Ave.
Columbus, OH 43207-2700
Phone: 614.829.1200
Fax: 614.829.1488

info@mcgillairsilence.com
www.mcgillairsilence.com

(1-3)

Noble Company
7300 Enterprise Dr.
Spring Lake, MI 49456
Phone: 800.878.5788
Fax: 800.272.1519

info@noblecompany.com
www.noblecompany.com

(4)

Sound Fighter Systems LLC
PO Box 7216
Shreveport, LA 71137
Phone: 866.348.0833
Fax: 713.865.7373

info@soundfighter.com
www.soundfighter.com

(2)

Soundown Corporation
16 Broadway
Salem, MA 01970
Phone: 978.745.7000
Fax: 978.745.0900

info@soundown.com
www.soundown.com

(1, 2)

The Soundcoat Company
1 Burt Drive
Deer Park, NY 11729
Phone: 800.394.8913
Fax: 631.242.2246

info@soundcoat.com
www.soundcoat.com

(2)

Sound Barrier Systems

1. Curtains
2. Doors
3. Operable Partitions
4. Panels
5. Seals
6. Transportation Noise Barriers
7. Walls
8. Windows

Acoustax Noise Barriers
243 W 8th St.
Wyoming, PA 18644
Phone: 800.233.9601
Fax: 570.693.3500
info@acoustax.com
www.acoustax.com
(3, 4, 7)

Acoustiblok, Inc.
6900 Interbay Blvd.
Tampa, FL 33616
Phone: 813.980.1140
Fax: 813.849.6347
info@acoustiblok.com
www.acoustiblok.com
(4, 6, 7)

Acoustical Surfaces
123 Columbia Court N.
Chaska, MN 55316
Phone: 952.448.5300
Fax: 952.448.2613
info@acousticalsurfaces.com
www.acousticalsurfaces.com
(1-5, 7, 8)

American Acoustical
Products/Ward Process
311 Hopping Brook Rd
Holliston, MA 01746
Phone: 508.429.1165
Fax: 508.429.8543
info@aapusa.com
www.aapusa.com
(1, 4, 7)

Blachford, Inc.
1400 Nuclear Drive
West Chicago, IL 60185
Phone: 630.231.8300
Fax: 630.231.8321
info@blachford.com
www.blachford.com
(1, 6, 7)

Eckel Industries
Acoustic Division
155 Fawcett St.
Cambridge, MA 02138
Phone: 617.491.3221
Fax: 617.547.2171
info@eckelusa.com
www.eckelusa.com
(2, 4, 7, 8)

George Koch Sons, LLC.
10 S. Eleventh Avenue
Evansville, IN 47712
Phone: 888.873.5624
Fax: 877.726.5427
info@kochllc.com
www.kochllc.com
(2, 4, 6-8)

Industrial Acoustics Co. Inc.
1160 Commerce Ave.
Bronx, NY 10462
Phone: 718.931.8000
Fax: 718.863.1138
info@industrialacoustics.com
www.industrialacoustics.com
(2-4, 6-8)

Industrial Noise Control, Inc.,
401 Airport Rd.
North Aurora, IL 60542
Phone: 800.954.1998
Fax: 800.420.4928
info@industrialnoisecontrol.com
www.industrialnoisecontrol.com
(1, 2, 4, 6-8)

Jamison Door Co.
55 JV Jamison Drive
Hagerstown, MD 21740
Phone 800.532.3667
Fax: 301.791.7339
info@jamisondoor.com
www.jamisondoor.com
(2)

Keene Building Products
5910 Landerbrook Dr.
Ste #210
Mayfield Heights, OH 44124
Phone: 877.514.5336
Fax: 440.605.1120
info@keenebuilding.com
www.keenebuilding.com
(7)

Kinetics Noise Control, Inc.,
6300 Irelan Place
Dublin, OH 43017
Phone: 877.457.2695
Fax: 614.889.0540
info@kineticsnoise.com
www.kineticsnoise.com
(1, 2, 4, 7)

Krieger Specialty Products
4880 Gregg Rd.
Pico Rivera, CA 90660
Phone: 562.695.0645
Fax: 562.692.0146
info@kriegerproducts.com
www.kriegerproducts.com
(2, 8)

McGill Air Silence, LLC,
2400 Fairwood Ave.
Columbus, OH 43207-2700
Phone: 614.829.1200
Fax: 614.829.1488
info@mcgillairsilence.com
www.mcgillairsilence.com
(1, 2, 4, 7, 8)

Metal Form Manufacturing
5960 W. Washington St.
Phoenix, AZ 85043
Phone: 602.233.1211
Fax: 602.233.2033
info@mfmca.com
www.mfmca.com
(2, 4, 6, 7)

Noble Company
7300 Enterprise Dr.
Spring Lake, MI 49456
Phone: 800.878.5788
Fax: 800.272.1519
info@noblecompany.com
www.noblecompany.com
(3)

Overly Door Company
574 W. Otterman St.
Greensburg, PA 15601
Phone: 800.979.7300
Fax: 724.830.2871
info@door.overly.com
www.overly.com
(2, 8)

PAC International, Inc.
6585 Whispering Sands Dr.
Las Vegas, NV 89131-2221
Phone: 866.774.2100
Fax: 866.649.2710
info@pac-intl.com
www.pac-intl.com
(7)

Plywall
154 Wire Rd.
Thomson, GA 30824
Phone: 800.531.5558
Fax: 706.595.6600
info@plywall.com
www.plywall.com
(6)

RPG Diffusor Systems, Inc.
651-c Commerce Drive
Upper Marlboro, MD 20774
Phone: 301.249.0044
Fax: 301.390.3602
info@rpginc.com
www.rpginc.com
(4, 7)

Sound Fighter Systems LLC
PO Box 7216
Shreveport, LA 71137
Phone: 866.348.0833
Fax: 713.865.7373
info@soundfighter.com
www.soundfighter.com
(1, 2, 4, 6, 7)

Soundown Corporation
16 Broadway
Salem, MA 01970
Phone: 978.745.7000
Fax: 978.745.0900
info@soundown.com
www.soundown.com
(1, 4, 7)

Soundproof Windows, Inc.
4673 Aircenter Circle
Reno, NV 89502
Phone: 877.438.7843
Fax: 877.226.4063
info@soundproofwindows.com
www.soundproofwindows.com
(2, 8)

St. Cloud Window, Inc.
PO Box 1577
St. Cloud, MN 53602
Phone: 800.383.9311
Fax: 320.255.1513
info@stcloudwindow.com
www.stcloudwindow.com
(8)

Vibro-Acoustics
727 Tapscott Rd.
Toronto, Ontario,
Canada M1X 1A2
Phone: 416.291.7371
Fax: 416.291.8049
info@vibro-acoustics.com
www.vibro-acoustics.com
(4)

Composite Materials

1. Barrier/Fiber Composites
2. Barrier/Foam composites
3. Masonry Units

3M E-A-R
7911 Zionsville Rd.
Indianapolis, IN 46268
Phone: 877.327.4332
Fax: 317.692.3111
info@earsc.com
www.earsc.com
(1, 2)

Acoustiblok, Inc.
6900 Interbay Blvd.
Tampa, FL 33616
Phone: 813.980.1400
Fax: 813.849.6347
info@acoustiblok.com
www.acoustiblok.com
(1)

Acoustical Surfaces
123 Columbia Court N.
Chaska, MN 55318
Phone: 800.854.2948
Fax: 952.448.2613
info@acousticalsurfaces.com
www.acousticalsurfaces.com
(2)

American Acoustical
Products/Ward Process
311 Hopping Brook Rd
Holliston, MA 01746
Phone: 508.429.1165
Fax: 508.429.8543
info@aapusa.com
www.aapusa.com
(1, 2)

Blachford, Inc.
1400 Nuclear Drive
West Chicago, IL 60185
Phone: 630.231.8300
Fax: 630.231.8321
info@blachford.com
www.blachford.com
(1, 2)

Industrial Noise Control, Inc.,
401 Airport Rd.
North Aurora, IL 60542
Phone: 800.954.1998
Fax: 800.420.4928
info@industrialnoisecontrol.com
www.industrialnoisecontrol.com
(1, 2)

Kinetics Noise Control, Inc.,
6300 Irelan Place
Dublin, OH 43017
Phone: 877.457.2695
Fax: 614.889.0540
info@kineticsnoise.com
www.kineticsnoise.com
(1, 2)

McGill Air Silence, LLC,
2400 Fairwood Ave.
Columbus, OH 43207-2700
Phone: 614.829.1200
Fax: 614.829.1488
info@mcgillairsilence.com
www.mcgillairsilence.com
(1, 2)

RPG Diffusor Systems, Inc.
651-c Commerce Drive
Upper Marlboro, MD 20774
Phone: 301.249.0044
Fax: 301.390.3602
info@rpginc.com
www.rpginc.com
(2, 3)

Sound Fighter Systems LLC
PO Box 7216
Shreveport, LA 71137
Phone: 866.348.0833
Fax: 713.865.7373
info@soundfighter.com
www.soundfighter.com
(1, 2)

Soundown Corporation
16 Broadway
Salem, MA 01970
Phone: 978.745.7000
Fax: 978.745.0900
info@soundown.com
www.soundown.com
(1, 2)

The Soundcoat Company
1 Burt Drive
Deer Park, NY 11729
Phone: 800.394.8913
Fax: 631.242.2246
info@soundcoat.com
www.soundcoat.com
(2)

Composite Systems

1. Curtains
2. Enclosures/Quiet Rooms
3. Open-Plan Partitions
4. Panels
5. Quilted Composites
6. Roof Decks

Acoustax Noise Barriers
243 W 8th St.
Wyoming, PA 18644
Phone: 800.233.9601
Fax: 570.693.3500
info@acoustax.com
www.acoustax.com
(2, 4)

Acoustiblok, Inc.
6900 Interbay Blvd.
Tampa, FL 33616
Phone: 813.980.1140
Fax: 813.849.6347
info@acoustiblok.com
www.acoustiblok.com
(4)

Acoustical Surfaces
123 Columbia Court N.
Chaska, MN 55316
Phone: 952.448.5300
Fax: 952.448.2613
info@acousticalsurfaces.com
www.acousticalsurfaces.com
(1, 2, 4, 5)

American Acoustical
Products/Ward Process
311 Hopping Brook Rd
Holliston, MA 01746
Phone: 508.429.1165
Fax: 508.429.8543
info@aapusa.com
www.aapusa.com
(1, 4, 5)

Blachford, Inc.
1400 Nuclear Drive
West Chicago, IL 60185
Phone: 630.231.8300
Fax: 630.231.8321
info@blachford.com
www.blachford.com
(1, 5)

George Koch Sons, LLC.
10 S. Eleventh Avenue
Evansville, IN 47712
Phone: 888.873.5624
Fax: 877.726.5427
info@kochllc.com
www.kochllc.com
(2-4)

Industrial Acoustics Co. Inc.
1160 Commerce Ave.
Bronx, NY 10462
Phone: 718.931.8000
Fax: 718.863.1138
info@industrialacoustics.com
www.industrialacoustics.com
(2, 4)

Industrial Noise Control, Inc.,
401 Airport Rd.
North Aurora, IL 60542
Phone: 800.954.1998
Fax: 800.420.4928
info@industrialnoisecontrol.com
www.industrialnoisecontrol.com
(1, 2, 4, 5)

Kinetics Noise Control, Inc.,
6300 Irelan Place
Dublin, OH 43017
Phone: 877.457.2695
Fax: 614.889.0540
info@kineticsnoise.com
www.kineticsnoise.com
(1, 2, 4, 5)

McGill Air Silence, LLC,
2400 Fairwood Ave.
Columbus, OH 43207-2700
Phone: 614.829.1200
Fax: 614.829.1488
info@mcgillairsilence.com
www.mcgillairsilence.com
(1-6)

Metal Form Manufacturing
5960 W. Washington St.
Phoenix, AZ 85043
Phone: 602.233.1211
Fax: 602.233.2033
info@mfmca.com
www.mfmca.com
(2, 4)

RPG Diffusor Systems, Inc.
651-c Commerce Drive
Upper Marlboro, MD 20774
Phone: 301.249.0044
Fax: 301.390.3602
info@rpginc.com
www.rpginc.com
(4)

Sound Fighter Systems LLC
PO Box 7216
Shreveport, LA 71137
Phone: 866.348.0833
Fax: 713.865.7373
info@soundfighter.com
www.soundfighter.com
(4)

Soundown Corporation
16 Broadway
Salem, MA 01970
Phone: 978.745.7000
Fax: 978.745.0900
info@soundown.com
www.soundown.com
(5)

Vibro-Acoustics
727 Tapscott Rd.
Toronto, Ontario,
Canada M1X 1A2
Phone: 416.291.7371
Fax: 416.291.8049
info@vibro-acoustics.com
www.vibro-acoustics.com
(2, 4)

Vibration Damping Materials

1. Active Dampers
2. Adhesives
3. Constrained-Layer Composites
4. Coatings
5. Sheets
6. Tapes

3M E-A-R
7911 Zionsville Rd.
Indianapolis, IN 46268
Phone: 877.327.4332
Fax: 317.692.3111
info@earsc.com
www.earsc.com
(3, 5, 6)

Advanced Antivibration Components – AAC
2101 Jericho Turnpike
New Hyde Park, NY 11040
Phone: 516.328.3662
Fax: 516.328.3365
info@vibrationmounts.com
www.vibrationmounts.com
(5, 6)

American Acoustical
Products/Ward Process
311 Hopping Brook Rd
Holliston, MA 01746
Phone: 508.429.1165
Fax: 508.429.8543
info@aapusa.com
www.aapusa.com
(1-3, 5)

Barry Controls
82 South St
Hopkinton, MA 01748
Phone: 800.227.7962
Fax: 508.417.7224
info@barrycontrols.com
www.barrycontrols.com
(1, 3)

Blachford, Inc.
1400 Nuclear Drive
West Chicago, IL 60185
Phone: 630.231.8300
Fax: 630.231.8321
info@blachford.com
www.blachford.com
(2-6)

Industrial Noise Control, Inc.,
401 Airport Rd.
North Aurora, IL 60542
Phone: 800.954.1998
Fax: 800.420.4928
info@industrialnoisecontrol.com
www.industrialnoisecontrol.com
(4, 5)

Kinetics Noise Control, Inc.,
6300 Irelan Place
Dublin, OH 43017
Phone: 877.457.2695
Fax: 614.889.0540
info@kineticsnoise.com
www.kineticsnoise.com
(2, 4, 5)

McGill Air Silence, LLC,
2400 Fairwood Ave.
Columbus, OH 43207-2700
Phone: 614.829.1200
Fax: 614.829.1488
info@mcgillairsilence.com
www.mcgillairsilence.com
(2, 4, 5)

Moog CSA Engineering, Inc.
2565 Leghorn St.
Mountain View, CA 94043
Phone: 650.210.9000
Fax: 650.210.9001
info@csaengineering.com
www.csaengineering.com
(1, 3)

PAC International, Inc.
6585 Whispering Sands Dr.
Las Vegas, NV 89131-2221
Phone: 866.774.2100
Fax: 866.649.2710
info@pac-intl.com
www.pac-intl.com
(11)

RPG Diffusor Systems, Inc.
651-c Commerce Drive
Upper Marlboro, MD 20774
Phone: 301.249.0044
Fax: 301.390.3602
info@rpginc.com
www.rpginc.com
(3, 5)

Silentium
2 Bergman St.
Tamar Science Pk.
Rehovot 76703, Israel
Phone: +972.8.946.8664
Fax: +972.8.946.8604
info@silentium.com
www.silentium.com
(1)

Soundown Corporation
16 Broadway
Salem, MA 01970
Phone: 978.745.7000
Fax: 978.745.0900
info@soundown.com
www.soundown.com
(3-5)

Taylor Devices, Inc.
90 Taylor Dr.
N. Tonawanda, NY 14120
Phone: 716.694.0800
Fax: 716.695.6015
info@taylordevices.com
www.taylordevices.com
(1)

The Soundcoat Company
1 Burt Drive
Deer Park, NY 11729
Phone: 800.394.8913
Fax: 631.242.2246
info@soundcoat.com
www.soundcoat.com
(2, 3-5)

Vibration Isolation Systems

1. Active Isolators
2. Bases
3. Cable Isolators
4. Elastomeric
5. Floating Floors
6. Machinery Mounts
7. Pipe Connectors
8. Pneumatic
9. Seismic
10. Steel Spring
11. Vibration Dampers

3M E-A-R
7911 Zionsville Rd.
Indianapolis, IN 46268
Phone: 877.327.4332
Fax: 317.692.3111
info@earsc.com
www.earsc.com
(4, 6, 11)

Acoustical Surfaces
123 Columbia Court N.
Chaska, MN 55316
Phone: 952.448.5300
Fax: 952.448.2613
info@acousticalsurfaces.com
www.acousticalsurfaces.com
(5, 11)

Advanced Antivibration
Components – AAC
2101 Jericho Turnpike
New Hyde Park, NY 11040
Phone: 516.328.3662
Fax: 516.328.3365
info@vibrationmounts.com
www.vibrationmounts.com
(2-4, 6, 7, 9-11)

Barry Controls
82 South St
Hopkinton, MA 01748
Phone: 800.227.7962
Fax: 508.417.7224
info@barrycontrols.com
www.barrycontrols.com
(1-8, 10, 11)

Blachford, Inc.
1400 Nuclear Drive
West Chicago, IL 60185
Phone: 630.231.8300
Fax: 630.231.8321
info@blachford.com
www.blachford.com
(11)

Eckel Industries
Acoustic Division
155 Fawcett St.
Cambridge, MA 02138
Phone: 617.491.3221
Fax: 617.547.2171
info@eckelusa.com
www.eckelusa.com
(4, 5, 10)

ECORE International
715 Fountain Ave
PO Box 989
Lancaster, PA 17601
Phone: 866.883.7780
Fax: 717.295.3414
info@qtsoundcontrol.com
www.ecoreintl.com/
(5)

Fabreeka International, Inc.
1023 Turnpike St.
Stoughton, MA 02072
Phone: 800.322.7352
Fax: 781.341.3983
info@fabreeka.com
www.fabreeka.com
(4-6, 8, 10, 11)

Industrial Acoustics Co. Inc.
1160 Commerce Ave.
Bronx, NY 10462
Phone: 718.931.8000
Fax: 718.863.1138
info@industrialacoustics.com
www.industrialacoustics.com
(5)

ITT - Enidine Inc.
7 Centre Dr.
Orchard Park, NY 14127
Phone: 716.662.1900
Fax: 716.662.1909
info@enidine.com
www.enidine.com
(3, 4, 9-11)

Keene Building Products
5910 Landerbrook Dr.
Ste #210
Mayfield Heights, OH 44124
Phone: 877.514.5336
Fax: 440.605.1120
info@keenebuilding.com
www.keenebuilding.com
(5)

Kinetics Noise Control, Inc.,
6300 Irelan Place
Dublin, OH 43017
Phone: 877.457.2695
Fax: 614.889.0540
info@kineticsnoise.com
www.kineticsnoise.com
(2-11)

Maxxon Corp.
920 Hamel Rd.
P.O. Box 253
Hamel, MN 55340
Phone: 800.356.7887
Fax: 763.478.2431
info@maxxon.com
www.maxxoncorporation.com
(5)

Moog CSA Engineering, Inc.
2565 Leghorn St.
Mountain View, CA 94043
Phone: 650.210.9000
Fax: 650.210.9001
info@csaengineering.com
www.csaengineering.com
(1, 4, 11)

RPG Diffusor Systems, Inc.
651-c Commerce Drive
Upper Marlboro, MD 20774
Phone: 301.249.0044
Fax: 301.390.3602
info@rpginc.com
www.rpginc.com
(2, 4, 5, 9-11)

Silentium
2 Bergman St.
Tamar Science Pk.
Rehovot 76703, Israel
Phone: +972.8.946.8664
Fax: +972.8.946.8604
info@silentium.com
www.silentium.com
(11)

Sorbothane Inc.
2144 State Rte. 59
Kent, OH 44240
Phone: 800.838.3906
Fax: 330.678.1303
info@sorbothane.com
www.sorbothane.com
(4)

Soundown Corporation
16 Broadway
Salem, MA 01970
Phone: 978.745.7000
Fax: 978.745.0900
info@soundown.com
www.soundown.com
(5, 6, 9-11)

Taylor Devices, Inc.
90 Taylor Dr.
N. Tonawanda, NY 14120
Phone: 716.694.0800
Fax: 716.695.6015
info@taylordevices.com
www.taylordevices.com
(1, 2, 4-11)

The VMC Group
113 Main St.
Bloomington, NJ 07403
Phone: 800.569.8423
Fax: 973.492.8430
info@thevmcgroup.com
www.thevmcgroup.com
(3, 4, 9, 10)

Vibro-Acoustics
727 Tapscott Rd.
Toronto, Ontario,
Canada M1X 1A2
Phone: 416.291.7371
Fax: 416.291.8049
info@vibro-acoustics.com
www.vibro-acoustics.com
(5)

Silencers

1. Active Attenuators
2. Ducts
3. Duct Silencers
4. Electric Motor Silencers
5. Fan Silencers
6. Filter Silencers
7. General Industrial Silencers
8. High-Pressure Exhaust Silencers
9. Intake and Exhaust Silencers
10. Pulsation Dampers
11. Splitter/Louvre Silencers

Acoustical Surfaces
123 Columbia Court N.
Chaska, MN 55316
Phone: 952.448.5300
Fax: 952.448.2613
info@acousticalsurfaces.com
www.acousticalsurfaces.com
(2-5, 8, 9)

Allied Witan Co.
13805 Progress Pkwy.
North Royalton, OH 44133
Phone: 440.237.9630
Fax: 440.237.9633
info@alwitco.com
www.alwitco.com
(6-10)

Barry Controls
82 South St
Hopkinton, MA 01748
Phone: 800.227.7962
Fax: 508.417.7224
info@barrycontrols.com
www.barrycontrols.com
(8)

Eckel Industries
Acoustic Division
155 Fawcett St.
Cambridge, MA 02138
Phone: 617.491.3221
Fax: 617.547.2171
info@eckelusa.com
www.eckelusa.com
(9)

Exair Corporation
11510 Goldcoast Dr.
Cincinnati, OH 45249-1621
Phone: 513.671.3322
Fax: 513.671.3363
info@exair.com
www.exair.com
(7-9)

George Koch Sons, LLC.
10 S. Eleventh Avenue
Evansville, IN 47712
Phone: 888.873.5624
Fax: 877.726.5427
info@kochllc.com
www.kochllc.com
(2)

Industrial Acoustics Co. Inc.
1160 Commerce Ave.
Bronx, NY 10462
Phone: 718.931.8000
Fax: 718.863.1138
info@industrialacoustics.com
www.industrialacoustics.com
(2-9, 11)

Industrial Noise Control, Inc.,
 401 Airport Rd.
 North Aurora, IL 60542
 Phone: 800.954.1998
 Fax: 800.420.4928
info@industrialnoisecontrol.com
www.industrialnoisecontrol.com
 (3, 5, 7)

Kinetics Noise Control, Inc.,
 6300 Irelan Place
 Dublin, OH 43017
 Phone: 877.457.2695
 Fax: 614.889.0540
info@kineticsnoise.com
www.kineticsnoise.com
 (2, 3, 5, 7-9, 11)

McGill Air Silence, LLC,
 2400 Fairwood Ave.
 Columbus, OH 43207-2700
 Phone: 614.829.1200
 Fax: 614.829.1488
info@mcgillairsilence.com
www.mcgillairsilence.com
 (2-9, 11)

Metal Form Manufacturing
 5960 W. Washington St.
 Phoenix, AZ 85043
 Phone: 602.233.1211
 Fax: 602.233.2033
info@mfmca.com
www.mfmca.com
 (2, 7, 9, 11)

Silentium
 2 Bergman St.
 Tamar Science Pk.
 Rehovot 76703, Israel
 Phone: +972.8.946.8664
 Fax: +972.8.946.8604
info@silentium.com
www.silentium.com
 (1, 3-5, 7-9)

Soundown Corporation
 16 Broadway
 Salem, MA 01970
 Phone: 978.745.7000
 Fax: 978.745.0900
info@soundown.com
www.soundown.com
 (2, 3, 9)

Vibro-Acoustics
 727 Tapscott Rd.
 Toronto, Ontario,
 Canada M1X 1A2
 Phone: 416.291.7371
 Fax: 416.291.8049
info@vibro-acoustics.com
www.vibro-acoustics.com
 (1, 3, 5, 7, 9, 11)

APPENDIX C

Partial Listing of Aftermarket Cab Manufacturers, and
Suppliers of Stud-Welding Systems

I. MOBILE SURFACE EQUIPMENT CAB MANUFACTURERS

Angus-Palm
315 Airport Drive
Watertown, SD 57201
Phone: 605.886.5681
Fax: 605.886.6179

www.angus-palm.com

OEM Cabs, ROPS & Custom Metal Fabrications

Cabs, Rops & Attachments, Inc.
8725 S. Gravel Pit Road
Iron River, WI 54847
Phone: 800.743.3993
Fax: 715.372.8950

www.cabs-rops.com

New and Reconditioned Cabs

Custom Products of Litchfield
1715 South Sibley Avenue
Litchfield, MN 55355-0070
Phone: 800.222.5463
Fax: 320.693.7252

www.800cabline.com

Custom-made Cabs

Kenco Manufacturing
P.O. Box 837
Atoka, OK 74525
Phone: 580.889.5222
Fax: 580.889.7151

www.kencomfg.com

New Cabs

Lake Superior Cabs, Inc.
121 West Harney Road
Esko, MN 55733
Phone: 800.328.1823
Fax: 218.879.4640

www.lakesuperiorcabs.com

Reconditioned Cabs, ROPS Skin Kits

Lankota, Inc.
270 West Park Avenue
Huron, SD 57350
Phone: 866.526.5682
Fax: 605.352.2927

www.lankotagroup.com

New and Retrofit Custom Cabs

Saf-T-Cab Inc.
P.O. Box 2587
Fresno, CA 93745
Phone: 800.344.7491
Fax: 559.268.5822

www.saftcab.com

Aftermarket Cabs

Sims Cab Depot
P.O. Box 340
200 Moulinette Road
Long Sault, Ontario, Canada K0C 1P0
Phone: 800.225.7290
Fax: 613.534.2182

www.cabdepot.com

Aftermarket Cabs and ROPS

II. STUD WELDERS, STUDS, COVER BUTTONS

Nelson Stud Welding
9008 S. Thomas Avenue
Bridgeview, IL 60455
Phone: 708.430.3770
Fax: 708.430.3975
www.nelsonstud.com

Stud Welding Company
750 Glen Avenue
Moorestown, NJ 08057
Phone: 800.523.5092
Fax: 856.866.1818
www.studweldingco.com

III. STICK-ON STUDS (SELF-ADHESIVE BACK)

Barrier Corporation
9806 SW Tigard Street
Tigard, OR 97223
Phone: 503.639.4192
Fax: 503.684.1515
www.barriercorp.com

APPENDIX D

Literature References

I. TRADE JOURNALS

Industrial Hygiene News
Rimbach Publishing, Inc.
8650 Babcock Boulevard
Pittsburgh, PA 15237
Phone: 800.245.3182
Fax: 412.396.9720
www.rimbach.com

Modern Materials Handling
EH Publishing Network
P.O. Box 1496
Framingham, MA 01701
Phone: 800.315.1578 x 294
Fax: 508.663.1599
www.mmh.com

Pollution Equipment News
Rimbach Publishing, Inc.
8650 Babcock Boulevard
Pittsburgh, PA 15237
Phone: 800.245.3182
Fax: 412.396.9720
www.rimbach.com

Industrial Maintenance and
Plant Operation
Advantage Business Media
P.O. Box 3574
Northbrook, IL 60065
Phone: 847.559.7560
Fax: 847.291.4816
www.impomag.com

New Equipment Digest
Penton Media, Inc.
1300 East 9th Street
Cleveland, OH 44114
Phone: 216.696.7000
Fax: 216.696.8208
www.newequipment.com

II. MAGAZINES

Aggregates Manager
Randall Reilly Publishing
2340 S River Road, # 202
Des Plaines, IL 60018
(847) 636-5060
Fax: (847) 636-5077
www.aggman.com

EHS Today
Penton Media, Inc.
1300 East 9th Street
Cleveland, OH 44114
(216) 696-7000
Fax: (216) 696-8208
www.ehstoday.com

Industrial Safety & Hygiene News
2401 W Big Beaver Rd, Ste 700
Troy, MI 48084
Phone: 847.763.9534
Fax: 847.763.9538
www.ishn.com

Coal Age
Mining Media, Inc.
8751 East Hampden Avenue,
Suite B-1
Denver, CO 80231
Phone: 303.283.0640
Fax: 303.283.0641
www.coalage.com

Engineering & Mining Journal
Mining Media, Inc.
8751 East Hampden Avenue,
Suite B-1
Denver, CO 80231
(303) 283-0640
Fax: (303) 283-0641
www.e-mj.com

Occupational Safety & Health
1105 Media, Inc.
9201 Oakdale Ave., Ste 101
Chatsworth, CA 91311
Phone: 818.814.5200
Fax: 818.734.1522
www.ohsonline.com

Rock Products

Penton Media, Inc.
330 North Wabash Avenue,
Suite 2300
Chicago, IL 60611
(312) 595-1080
Fax: (312) 595-0295
www.rockproducts.com

Sensors

Questex Media Group
275 Grove Street, Suite 2-130
Newton, MA 02466
Phone: 888.552.4346
Fax: 617.219.8310
www.sensorsmag.com

Urgent Communications

Penton Media, Inc.
330 North Wabash Avenue,
Suite 2300
Chicago, IL 60611
(312) 595-1080
Fax: (312) 595-0295
www.urgentcomm.com

Sound & Vibration

P.O. Box 40416
Bay Village, OH 44140
Phone: 440.835.0101
Fax: 440.835.9303
www.sandv.com

III. GOVERNMENT PUBLICATIONS

“Noise Abatement of a Pneumatic Rock Drill,” Report of Investigations (RI) 7998, U.S. Department of Interior (DOI), U.S. Bureau of Mines (USBM), 1974.

“Noise Reduction of a Pneumatic Rock Drill,” RI 8082, DOI, USBM, 1975.

“Noise Control Proceedings,” Informational Circular (IC) 8686, DOI, USBM, 1975.

“Noise Control of Diesel-Powered Underground Mining Machines,” IC 8837, DOI, USBM, 1979.

“Summary of Noise Controls for Mining Equipment,” U.S. Department of Labor (DOL), Mine Safety and Health Administration (MSHA), 1985.

“Bulldozer Noise Control,” Contract Number J0177049 Bolt, Beranek, and Newman, Inc., DOI, USBM, 1980.

“Front-End Loader Noise Control,” Contract Number J0395028, Bolt, Beranek, and Newman, Inc., DOI, USBM, 1980.

“Mining Machinery Noise Control Guidelines,” DOI, USBM, 1983.

“Improving Barrier Insertion Loss,” IR 1117, DOL, MSHA, 1980.

“Compendium of Materials for Noise Control,” NIOSH Publication No. 80-116, 1980.

“Fabrication Manual for a Reduced-Noise Auger Miner Cutting Head,” IC 8971, DOI, USBM, 1984.

“Retrofit Noise Control Modifications for Crushing and Screening Equipment in the Nonmetallic Mining Industry—An Applications Manual,” IC 8975, DOI, USBM, 1984.

“Noise Control of an Underground Continuous Miner-Auger Type,” Informational Report (IR) 1056, DOL, MSHA, 1977.

“In-Plant Partial Noise Enclosures for the Mining Industry,” IR 1154, DOL, MSHA, 1993.

IV. REFERENCE BOOKS

“Noise Control for Buildings and Manufacturing Plants”, Bolt, Beranek, and Newman, Inc., 1981.

“Noise and Vibration Control,” Leo Beranek, 1971.

“Handbook of Noise Control,” Cyril Harris, 1957.