Use hearing protection.

Use rubber screens to reduce noise.

Identify areas with high noise levels.

Enclose screens and/or crushers.

Plant trees to form a noise barrier.
according to the Mine Safety and Health Administration (MSHA), “noise is one of the most pervasive health hazards in mining.” The agency goes on to say that occupational noise-induced hearing loss is one of the 10 leading work-related diseases/illnesses, and that prolonged exposure to hazardous noise levels can cause permanent, irreversible damage to hearing. MSHA’s metal/non-metal mine sound standards (30 CFR 56.5050 and 57.50501) define the noise exposure “action level” as an “eight-hour, time-weighted average sound level of 85 dBA integrating all sound levels from 80 dBA to at least 130 dBA.” A high level of noise, if left unabated, not only has a negative impact on employees, it can affect the surrounding community as well. “When we hire employees, they go through a drug test, to get the baseline of where their hearing is so we know if there are issues,” says Brian Dillard, area production manager for Rogers Group, Inc. in northern middle Tennessee. “We then train them on hearing loss prevention, including ear muffs and a wide variety of ear plugs. If employees are allowed to choose the type of hearing protection that is most comfortable for them, they are more likely to wear it. Employees should have their hearing checked when they first begin work and at regular intervals throughout their employment. If it is discovered that they have been overexposed to noise, enroll them in a hearing conservation program.”

Provide hearing protection for employees and ensure that they use it. There are many types of hearing protection available, including ear muffs and a wide variety of ear plugs. If employees are allowed to choose the type of hearing protection that is most comfortable for them, they are more likely to wear it. Employees should have their hearing checked when they first begin work and at regular intervals throughout their employment. If it is discovered that they have been overexposed to noise, enroll them in a hearing conservation program.

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Metal screens can be some of the biggest noise contributors in the processing plant. Consider using rubber screens, rather than metal, to reduce those noise levels. Rubber can reduce noise levels in other areas, as well. When material comes off the screens and drops into the chutes, it can make a lot of noise, especially when processing rip rap. Rubber liners in the chutes can help reduce that noise. In the pit, rubber truck bed liners on the haul trucks can help reduce the amount of noise created when a loader drops its initial bucket-load of material into the truck.

Oldcastle Materials conducts noise mapping in its facilities. A noise monitor is carried to different areas of the plant so that noise issues can be located. Labels in different colors and shapes are placed throughout the plant so employees can quickly and easily identify what is required. Areas with a green circle require no hearing protection; a yellow triangle means hearing protection is required; and an orange diamond means specialized hearing protection is required. And a red octagon requires dual hearing protection with limited exposure time.

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Screening towers are some of the worst noise offenders in the processing plant. Consider using rubber screens, rather than metal, to reduce those noise levels. Rubber can reduce noise levels in other areas, as well. When material comes off the screens and drops into the chutes, it can make a lot of noise, especially when processing rip rap. Rubber liners in the chutes can help reduce that noise. In the pit, rubber truck bed liners on the haul trucks can help reduce the amount of noise created when a loader drops its initial bucket-load of material into the truck.

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"From the employees’ perspective, there are a lot of things that we can do," says Brian Dillard, area production manager for Rogers Group, Inc. in northern middle Tennessee. "When we hire employees, they go through audiometric testing to get a baseline of when their hearing is. We ensure that they are wearing earplugs out in the plant and on the equipment by doing safety audits. A general rule of thumb is that any time you have to raise your voice to communicate, you have the potential for hearing loss, so you need to use earplugs.

Every year, at most of their locations, an occupational health specialist is brought in to sample the noise the employees are exposed to in the plant and mobile equipment. If overexposure is detected, the employee is automatically enrolled in a hearing conservation program.

Screens can be one of the worst offenders in an operation, but Dillard says rubber greatly reduces the noise. "The rubber on the top and middle decks of our scalping screens has a huge impact on noise reduction," he says. "We also use rubber in some of the chutes on our screen towers to reduce the noise made by larger size rocks. Rubber truck bed liners help reduce the noise of the initial dump from a loader bucket into the truck."

According to Dillard, berms create the best buffer between the operation and the community. "Bersms are your best bet, if you have the room and the infrastructure," he says. "If not, you can plant evergreen trees or anything else that will buffer the noise. We also enclose a lot of our screening and crushing towers to minimize the noise."

Dillard says that prevention and doing things to minimize the noise to start with can help in the long run. "If we can minimize the noise on the front end, then we don’t have to worry about hearing loss, and we don’t have to wear earplugs," he says.

"For employees, we conduct annual surveys, or audio grams, to see if they have any changes in their hearing," says Chris May, director of environmental, health, and safety for Oldcastle Materials companies. "We’re constantly monitoring that. We provide employees with different types of hearing protection. Some employees prefer to use ear muffs, some prefer ear plugs. For those who prefer ear plugs, there’s a wide variety. We offer them different types because we want them to be comfortable, and we want them to use them."

Oldcastle helps reduce the impact of noise on its employees by providing equipment with enclosed cabs, but it also does noise mapping. "We take a noise monitor around the facilities and to different parts of the plant so we can understand where the noise issues are and define those areas," May says, explaining that the noise mapping creates awareness and helps identify areas where hearing protection is required, as opposed to areas where it is just a good thing to do. Labels in different colors and shapes allow employees to easily identify whether the area requires no hearing protection, requires hearing protection, requires specialized hearing protection (NRR 30 and above), or requires dual hearing protection and limited exposure time.

“We do several things in the plant to protect the surrounding community from noise,” May says. “Where possible, we try to surround the properties with trees. We plant fast-growing trees to form a noise barrier, which is also aesthetically pleasing.”

Kinder, gentler noise from the equipment is important, too. "If we do night work, we use back-up alarms that have narrow bands, so it’s very specific to what’s behind that equipment, rather than having a wide band that goes everywhere," May adds. "You have to be directly behind it or in the path of it to hear the alarm. That way, it reduces the noise impact on the surrounding neighborhood."

"Workers are allowed to have so many decibels for so many minutes before they have to go into the hearing conservation program," he says, explaining that his employees are cross-trained to do every job in the quarry, so that someone working in an extremely noisy area in the morning can work in a different area in the afternoon. "One guy may be running the crusher in the morning, but after lunch he’ll crawl into the excavator. Everybody here just alternates around to do different jobs. By alternating drivers, I’ve eliminated the problem."

Newer mobile equipment is well engineered when it comes off the assembly line, so the operating noise has been greatly reduced. "You can put an operator into an excavator or a haul truck and have them there for eight hours, and the exposure will not be in excess," Iddings says. "With some of my older equipment, I have to be very careful. If I put a driver in an older haul truck for eight hours, we’d probably be exceeding the allowable amount. I watch that, so it doesn’t happen."

Iddings says the only other place he might have a borderline noise issue would be at the crusher. "Workers are allowed to have so many decibels for so many minutes before they have to go into the hearing conservation program," he says, explaining that his employees are cross-trained to do every job in the quarry, so that someone working in an extremely noisy area in the morning can work in a different area in the afternoon. "One guy may be running the crusher in the morning, but after lunch he’ll crawl into the excavator. Everybody here just alternates around to do different jobs. By alternating drivers, I’ve eliminated the problem."

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With only a few farms and ranches in the area, there are no issues with the community, but Iddings is still aware of his neighbors. "I’m working into the side of a hill on a limestone ridge, which is a natural noise barrier," he says. "My crushers are on the west side of the hill, and the prevailing wind is out of the west," he adds. "The noise from the crusher blows into the side of the hill, and then up and over. So nobody else is exposed to that noise."