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Editorial Note

Noise Control: An Overview

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EDITORIAL

Noise control, often known as noise mitigation, refers to a range of measures for reducing noise pollution or reducing the impact of noise, whether it occurs outside or indoors. Transportation noise management, building design, urban planning through zoning codes, and occupational noise control are the main areas of noise mitigation or abatement. The most common sources of environmental noise are traffic and aircraft noise.

Noise levels generated by social activities may have a continuous negative impact on the health of populations living in or occupying locations. Interior sound levels have been addressed using a variety of strategies, many of which are supported by local building rules. In the best-case scenario, planners should collaborate with design engineers to assess the trade-offs between roadway and architectural design. Design of outside walls, party walls, and floor and ceiling assemblies are examples of these strategies. Many of these methods rely on material science applications such as sound baffle construction or the use of sound-absorbing liners in interior spaces. Industrial noise control is a subset of noise control in interior architecture, with a focus on specialized methods of sound isolation from industrial machinery and worker protection at workstations. Bolt and Ingard's source, path, and receiver model is an effective noise management model.

Hazardous noise can be reduced by reducing noise output at the source, minimizing noise as it travels along a path to the listener, and supplying noise-attenuating equipment to the listener or receiver. A number of efforts are being taken to limit dangerous noise at its source. Buy Silent and the National Institute for Occupational Safety and Health's (NIOSH) Prevention through Design programs encourage the development of quiet equipment as well as the refurbishment and replacement of existing dangerous equipment with modern technology. The notion of noise reduction by pathway alterations refers to the adjustment of noise channels, both direct and indirect. Noise can be dangerous when it travels across reflective surfaces, such as smooth floors. Physical materials that absorb sound, such as foam, and walls that offer a sound barrier that alters existing systems to reduce hazardous noise are examples of pathway adjustments.

Workers can also create sound-dampening enclosures for loud equipment and isolation chambers from which they can control equipment remotely. These techniques keep sound from reaching the worker or other listeners along a path. Workers in an industrial or commercial sector must follow the proper hearing conservation programme. Unnecessary noise exposure is avoided through administrative controls such as staff restrictions in noisy places. A listener's last line of defence is personal protective equipment such as foam ear plugs or ear muffs that reduce sound. Except for the advent of the hybrid car, source control in roadway noise has produced little decrease in vehicle noise; however, hybrid use will need to reach a market share of around 50% to have a significant impact on noise source reduction on city streets. Because the consequences of greater speeds are aerodynamic and tyre noise related, highway noise is now less affected by vehicle type. Improved tyre tread designs for trucks in the 1970s, greater shielding of diesel stacks in the 1980s, and municipal vehicle control of unmuffled vehicles have all contributed to the lowering of noise at the source. A restaurant operator can use a tablet computer to control noise levels in different areas of the restaurant using a combination of sound absorption materials, arrays of microphones and speakers, and a digital processor: the microphone arrays pick up sound and send it to the digital processor, which controls the speakers to output sound signals on command.

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