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"Noise in the Subway System"

"It's sad, but they are never the same from when they started," Jose Iglessias, a safety director at the Transport Workers Union 100, said about the Metropolitan Transit Authority subway workers' hearing after taking mandatory annual hearing tests. "And when they start failing, MTA tells them there's no work available. I know a couple guys that are out of work now 'cause they can't hear anymore," Iglessias said.

The dangerously high levels of noise in the subway system have been proven to cause hearing loss in its workers, but what about in habitual subway riders? A recent study shows that the noise can also damage their hearing, since the decibel levels of the train screeching can be unsafe both inside the cars and outside on the platforms. At this point, no city agencies have taken any actions to regulate the noise, but this should be a matter of public concern.

This October, a group of researchers from Columbia University's Mailman School of Public Health released the results of a study on the dangerous decibel levels in several lines in four of New York City's boroughs inside and outside the moving cars with a precision sound level meter. The researchers found that noises on the platforms of one in ten stations measured around 100 decibels (comparable to the sound level of a jackhammer), which according to the World Health Organization and Environmental Protection Agency will lead to hearing loss if the sounds are heard repeatedly for as little as 30 minutes a day. The average maximum noise level in and outside of the trains was about 95 decibels.

The MTA runs a Hearing Conservation Program for its workers, including annual tests and recommending hearing protection. However, ear plugs and muffs are only recommended for certain tasks since the Authority considers some jobs safer without hearing protection, such as the track cleaners or construction crews, since they need to hear the trains coming. The MTA recommends that train conductors wear protection. The Occupational Safety and Health Administration (OSHA) guidelines show that workers' exposure to sounds 85 decibels and below are safe for 8-hour work days, but any higher, without protection, will do some damage. According to recent studies, the noise levels in the subway system are well above this level.

Frequent long-ride passengers should probably also wearing ear protection while they wait for and sit on the trains. The MTA does not issue any public warnings about the dangerous noise and avoids questions about its safety. The MTA Public Affairs office responded to the Columbia study saying "the methodology used is fundamentally flawed due to inadequate research" and that it has "long-standing employee protection policies."

The MTA did install several types of technology in the 1980s to reduce noise by modifying the walls, wheels, and rails, but these methods obviously have been effective in the long-term. And passenger's hearing has never been a priority.

The City's Department of Health and Mental Hygiene and the Department of Environmental Protection do not recognize subway noise as an urgent problem either. The DEP and the NYPD already enforce laws limiting other types of noise in the city like loud music, loud motorcycles, loud ventilation systems, but they do not control subway noise.

Dr. Jim Cone, the Director of Environmental and Occupational Disease Epidemiology in the New York City Department of Health and Mental Hygiene believes the issue of subway noise should be of the city government's concern. "I do think this should be a policy decision for the city.

But first we need to determine a level of awareness and interest," he said..

Since the issue has not gotten much publicity, however, perhaps many New Yorkers are unaware how much damage they are doing to their hearing already and are therefore not likely to express interest in pursuing noise-reduction policies.

Dr. Anil Lalwani, chairman of New York University's Department of Otalaryngology (ear, nose, and throat medicine), has observed more frequent apparent noise-induced hearing loss in his younger patients in recent years. He believes that subway noise was likely a contributing factor and should be regulated. "The city [government] and MTA should both be trying to reduce this noise," he said.

Noise-induced hearing loss is a result of daily brief exposure to noises 85 decibels and up, which deteriorates some of the limited cochlear hair cells inside the ear that are connected to the auditory nerve to interpret sound. The hair cells do not regenerate. The problem can only be remedied either with the use of hearing aids to amplify volume in the outer ear, or with a cochlear implant inserted surgically into the ear to stimulate the auditory nerve in the place of the cochlear hair cells. However, this an expensive and a not-yet perfected surgery.

What are the real solutions to the noise problem? Richard Riedel, an acoustician in Brightwater, NY, who specializes in architectural noise and runs Riedel Audio and Acoustic Consulting, explained the answers from the underground up: "Ideally, you would have high ceilings, trains farther away from the walls, insulated ceilings and walls to absorb some sound, insulated partitions between the local and express trains, lower speeds, and rubber wheels- and not just rubber-plated wheels which the MTA has tried in the past." He reiterated that these features would all be ideal, but not necessary applicable for the NYC subway system.

"I can say that these components have worked in other places. In Washington, D.C., the

station ceilings are all domed and coffered with absorptive panels, which helps a lot. And in Paris and Quebec, the train cars run on rubber tires, making them run much more quietly," he said. There is no reason why such modifications shouldn't work in New York City-- except of course for the lack of money, space, and time.

It is the original construction flaws that make the trains so loud today. The curved rails, metal-on-metal wheel-to-rail construction, narrow pathways between the trains and the wall, and the low ceilings, all exaggerate the reflection of sound waves. Perhaps the City will never be able to correct these mistakes, but there are inexpensive and straightforward measures it can take to protect its citizens from the associated hearing damage.

As Dr. Robyn Gershon, the faculty leader of the Columbia study, suggested, "I think the most effective way now to combat the problem would be a public awareness campaign and signs in the stations warning passengers to take personal precautions, like wearing earplugs, even though this would also come at some cost and discomfort." It is only this increased public awareness that can help galvanize the people and the city to request and fund more noise abatement measures for the future.

SOURCES

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Columbia Study press release:
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