PUBLIC HEALTH BRIEF

Health Impacts of Environmental Noise from Train Horns

Submitted to the Encinitas City Council by Natalie Muth, MD, MPH | April 8, 2026 | Re: Proposed Leucadia At-Grade Rail Crossings

Environmental noise is not a nuisance. It is a physiological stressor with well-documented, cumulative health consequences. The American Academy of Pediatrics (AAP), the American College of Cardiology (ACC), and the World Health Organization (WHO) have each issued formal statements identifying noise pollution as a serious and underrecognized public health threat. The ACC ranks it second only to air pollution among environmental health hazards. The WHO estimates noise-related disease causes the loss of more than one million healthy life-years annually in Western Europe alone.

The proposed at-grade crossings at Grandview and Phoebe streets would introduce 4 new 92-110-decibel train horns per train per crossing, with 54 train crossings per day. Combined with existing Leucadia crossing, this is 648 horn blasts per day. Repeated exposure to this level of noise directly damages hearing and triggers a chronic stress-response pathway that over time drives cardiovascular disease, metabolic dysfunction, and mental health effects. Railway noise is particularly harmful because it is intermittent, unpredictable, and impossible for residents to avoid.

DOCUMENTED HEALTH RISKS

Health Outcome	What the Evidence Shows
Permanent hearing loss	110 dB exceeds the direct-damage threshold. Sensorineural hearing loss from noise exposure is irreversible.
Heart disease and heart attack	2-3% increased risk per 10 dB increase in railway noise; 8% increased heart attack risk from traffic noise; 2% increase risk of heart disease mortality per 10dB above approx. 40dB
Heart failure and stroke	2-8% increased risk per 10 dB; moderate-quality evidence for stroke risk.
Diabetes	6% increased risk per 5 dB increase in ambient noise, mediated through chronic stress pathways.
Sleep disruption	Railway noise causes 3x greater odds of significant sleep disturbance than other traffic sources, at levels below 40 dB at night.
Children's learning and development	Lower reading comprehension, impaired cognitive performance, elevated stress markers, autonomic dysregulation.
Mental health	Depression, anxiety, and behavioral problems in children and adults with prolonged exposure.

Who bears the greatest burden. Children are uniquely vulnerable. They cannot remove themselves from a noisy environment, their developing neurological and cardiovascular systems are more susceptible to chronic stressors, and the effects accumulate across years of exposure during the developmental window when they matter most. The AAP notes that noise-induced hearing loss in children is irreversible.

The crossings as proposed represent a permanent source of noise at levels that medical science links to serious and lasting harm.

SOURCES

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