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LETTER

Design of Optimal Noise Hazard Control Strategy With Budget Constraint

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We have read Asawarungsaengkul and Nanthavanij's article carefully [1]. It says that for engineering controls only controlling at the machine and controlling along the path were considered. However, one of the most successful engineering ways to abate noise pollution is control at source using machines with lower levels of sound pollution or machines with noise control tools [2, 3, 4, 5]. This is different from when the enclosure or silencer is attached to the machine by the engineer. The common example of this is substitution of hydraulic systems in compressors with pneumatic systems. Although the price of a machine with lower noise pollution is higher than of one with higher noise levels, the price would be justified. In this article another cost-based model, which should be considered in the engineering approach, is implementation of machines with lower noise levels compared with higher noise levels.

Another point in this survey is that Occupational Safety and Health Administration (OSHA) [6] is used as a noise conservation program. The American Conference of Governmental Industrial Hygienists (ACGIH), which is used in most occupational research [7, 8, 9, 10], with its threshold limit value (TLV) of 85 dB(A) for an 8-h exposure is more protective for workers. It is recommended to use the ACGIH standard where the noise levels should not exceed 85 dB(A) instead of the OSHA standard with 90 dB(A) [11]. Moreover, the formulae for the combined noise level at location j can also be shortened. Hence, they should be revised as

$$\overline{L}_j = 10\log\left[10^{\frac{L_{ab}}{10}} + \sum_{t=1}^{q}\frac{10^{\frac{L_t}{10}}}{d_{tj}^2}\right], \tag{1}$$

$$w_j = \frac{1}{p}\times 2^{\left(\frac{\overline{Lj}-85}{5}\right)}, \tag{2}$$

$$w_j = 10\left[\log_{10}\left\{\sum_{k\in S} w_k\right\}\right] + 85. \tag{3}$$

The variables in the proposed equations remain the same as in the original article.

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