RECOMMENDATIONS FOR AN UPDATED EIAP METHODOLOGY

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Introduction An effective environmental impact assessment process (EIAP) to predict and evaluate the effects of noise is a vital part of an overall strategy for managing exposure to environmental noise. Useful concepts for conducting such analyses were initially introduced in the U.S. over twenty-five years ago by the Environmental Protection Agency (EPA) [1, 2] and the National Research Council (NRC) [3]. Seminal publications from these organizations provided a method for conducting an Environmental Impact Analysis in response to the requirements of the National Environmental Policy Act (NEPA) of 1969 [4]. Since then, there have been significant improvements in the scientific understanding of the effects of noise, and revisions in the necessary noise exposure criteria have been proposed, such as those recently recommended by the World Health Organization (WHO) [5]. There are also new environmental noise management concepts, as well as improved technical tools, which now warrant consideration for updating the EIAP methodology. The remainder of this paper examines the major issues which need to be considered and provides recommendations for an updated and expanded environmental noise impact assessment and mitigation process necessary to adequately protect the public health and welfare from an immission perspective.

Approach The following steps provide a conceptual framework for implementing an environmental noise impact assessment and mitigation program and are an expanded version of the original EIAP concepts developed in the U.S. As described elsewhere [e.g., 1-3], the goals of an environmental noise impact analysis are to determine the change in the noise environment that would be expected to occur as a result of a proposed development action and to discuss this expected change in terms of its predicted effects on exposed populations. Detailed analysis and comparison of the expected noise impacts of alternate solutions, and an evaluation of these impacts in the context of all potential environmental consequences and local conditions in an integral part of the analysis process.

The original EIAP concept focused primarily on predicting the number of people expected to be highly annoyed over an extended period of time by the changed noise environment and the potential risk of noise-induced hearing loss as the primary indicators of the effects of environmental noise on the public health and welfare, plus a consideration of the impacts of vibration and special noise sources. Methods to combine the various potential effects of changes in environmental noise levels, such as the EPA concepts of Total Weighted Population (TWP) and the Noise Impact Index (NII), are still useful, although further discussion is needed concerning the emphasis on cumulative, single-number indices versus separate predictions for the various effects of noise.

Although the earlier EPA EIAP approach was required only for major projects receiving Federal funding, this process is now recommended for use also in any major development project that can potentially have a significant environmental noise impact, especially at the local level, regardless of the funding source. Additionally, a negotiation process involving arbitration and dispute resolution has been added in the proposal presented here, as well as a final stage involving monitoring and evaluation of the final noise exposure levels and noise mitigation decisions. The process being recommended can be an effective *risk management tool* for proposed development projects and would involve the following stages:

Stage A: Describe the proposed development project and define potential noise problems
Stage B: Obtain and process all required information and identify potential solutions
Stage C: Balance costs and benefits
Stage D: Recommend optimum solutions and negotiate final decisions, including noise mitigation measures
Stage E: Monitor implementation of agreed-upon solution

This process will be most effective when it is used as part of a larger noise management program, such as a "Community-Based Environmental Noise Management Program" [6]. This concept involves the use of a variety of proactive and reactive noise management tools as part of overall urban planning. Its basic tenets include an identification of local noise concerns and community priorities and goals. These can be used to forge comprehensive, long-term solutions, while retaining flexibility to respond to more immediate concerns.

Conclusion The EIAP guidelines developed in the U.S. more than 25 years ago provided an early methodology for conducting an environmental noise impact analysis, although these concept need to be expanded to include negotiation between the affected parties, especially for noise mitigation options. In addition, the scientific exposure-response relationships concerning the effects of noise need to be updated. Environmental noise decisions need to consider the cost and technical feasibility of implementing noise mitigation options, as well as the particular local circumstances that exist. The current paper presented a very brief introduction to such an expanded concept, based on an earlier, more detailed papers by Finegold and Finegold [7] and by Finegold [8]. The proposed environmental noise management process brings the various stakeholders together to make decisions about how much noise will be allowed from any proposed major development project, regardless of how that project is funded. Five recommended steps were identified. The concepts presented in this paper are only the beginning to what will hopefully be an increasingly productive discussion of how environmental noise immission policies need to evolve in the future.

References

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